

MANUFACTURERS' RECORD

A WEEKLY SOUTHERN INDUSTRIAL
RAILROAD AND FINANCIAL NEWSPAPER.

EXPORTS AT SOUTHERN PORTS.

That the Southern ports are maintaining their position as exporters, and that they are increasing their importance as such, is shown by the following comparison of the values of the exports of merchandise at Southern and other ports for the nine months ended March 31, 1898, and for the same months in 1897:

Ports.	1897.	1898.	Increase.	Gain per ct.
Southern.....	\$313,262,922	\$355,471,499	\$42,208,577	13.44
Others.....	509,017,538	570,522,119	61,504,581	12.08
Total.....	\$822,280,460	\$925,993,618	\$103,713,158	12.61

The significance of these figures becomes greater when it is recalled that while the exports of cotton have amounted to 1,144,234 bales more in the seven months ended March 31, 1898, than in the same period ended March 31, 1897, the value of those exports have diminished by \$3,174,536, the difference preponderating at the Southern ports.

THE FULL TABLE OF CONTENTS WILL BE FOUND ON PAGE 318.

VOL. XXXIII
No. 19.

\$4.00 per year.
Single Copy
10 Cents.

Baltimore, June 3, 1898.

The Westinghouse Air-Brake Company

is now prepared to fill orders at an hour's notice for one or one thousand sets of **Air-Brakes for Freight Cars**, having at their new works an annual capacity for turning out air-brakes for

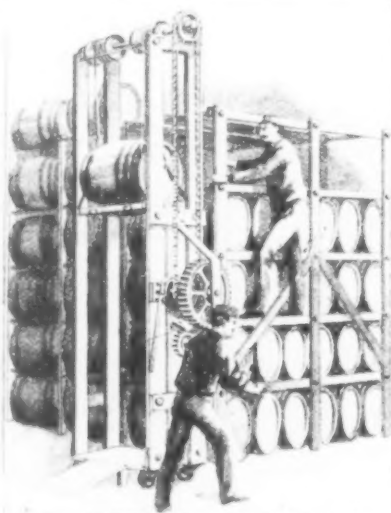
250,000 Freight Cars
6,000 Passenger Cars
10,000 Locomotives

Besides repairs for the 613,000 **Freight and Passenger Cars** and 31,500 **Locomotives** already equipped by

The Westinghouse Air-Brake Company



OLD METHOD.



NEW METHOD—Patented May 22, 1895.

The Fox Portable Elevator & Rack Co.

Office: 120, 122 Liberty Street, NEW YORK.

Compare the two methods
and figure on . .

1. Labor.
2. Storage Capacity.
3. Chances of leakage.
4. Ease of inspection.
5. Ability of removing individual barrel.

ROYAL BAG MF'G CO.

Charleston, S. C.

Wm. A. Wright, Pres.; W. B. Frost, Vice Pres.;
John L. King, Secy and Treas.

MANUFACTURERS OF
FERTILIZER SACKS, KAINIT SACKS, COTTON-SEED MEAL
SACKS, FLOUR AND GRAIN SACKS, TWINE.

IMPORTERS OF

BURLAPS.

THE MARION STEAM SHOVEL CO.

601 WEST CENTRE STREET,
MARION, OHIO.

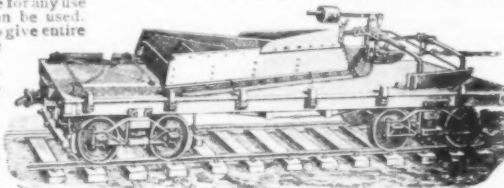


Manufacturers of
Barnhart's Steam Shovels, Dredges, Ditching Dredges, Railroad Ditchers, Wreckers, Ballast
Unloaders, etc. Our Steam Shovels are largely used on Railroads and by Contractors, Brick Man-
ufactures, and in excavating Iron Ore, Handling Stock Ore, Stripping Coal Fields and Stone Quarries.
and are a most desirable machine for any use
where excavating machinery can be used.
All of our machines guaranteed to give entire
satisfaction; otherwise may be
returned at our expense.
For Illustrated Catalogue, Pho-
tographs, and any other informa-
tion desired, address the

Marion Steam Shovel Co.

601 West Centre Street,

MARION, OHIO.



Barnhart's Ballast Unloader; no center rib or leader is required.





CLASSIFIED INDEX OF ADVERTISERS.

For ALPHABETICAL INDEX See Page 320.

Acid Chambers.

James Robertson Mfg. Co., Baltimore, Md.
Caroline Iron Works, Baltimore, Md.
Valk & Murdoch Iron Wks., Charleston, S. C.

Agricultural Implements.

Hench & Dromgold, York, Pa.

Air Brakes.

Westinghouse Air Brake Co., Pittsburg, Pa.

Air Compressors.

Clayton Air Compressor Works, New York.
Stillwell-Bierce & Smith-Valley Co., Dayton, O.
Hall Steam Pump Co., Pittsburg, Pa.
H. B. Smith Machine Co., Smithville, N. J.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.
Ingersoll-Sergeant Drill Co., New York, N. Y.
Rand Drill Co., New York, N. Y.
Sullivan Machinery Co., Chicago, Ill.

Anti-Friction Metals.

Theo. Hiertz & Son, St. Louis, Mo.
More, Jones & Co., St. Louis, Mo.
Bailey-Lebby Co., Charleston, S. C.

Antimony.

Theo. Hiertz & Son, St. Louis, Mo.

Architects.

Chas. A. M. Pray & Co., Providence, R. I.
Towers & Wallace, Holyoke, Mass.
John McDonald & Sons, Austin, Texas.
Frank P. Milburn, Charlotte, N. C.
Hales & Ballinger, Philadelphia, Pa.
James Stewart & Co., St. Louis, Mo.
C. R. Makepeace & Co., Providence, R. I.

Architectural Iron Work.

Norrich, Burnham & Co., Inc., Glen Rock, Pa.
Lombard Iron Wks. & Sup. Co., Augusta, Ga.
T. H. Brooks & Co., Cleveland, O.

Artisan Well Tools and Supplies.

[See Well Tools and Supplies.]

Asbestos.

H. W. Johns Manufacturing Co., New York.

Empire Paint & Roof Co., Philadelphia, Pa.

Asphalt Pavements.

Barber Asphalt Paving Co., New York, N. Y.
Warren Chem. & Mfg. Co., New York, N. Y.
National Roofing & Sup. Co., Louisville, Ky.

Attorney and Counsellor-at-Law.

Interstate Law Assn., Charleston, W. Va.
J. A. Thayer & Co., Charleston, W. Va.
Robt. W. Grasty, Atlanta, Ga.

Babbitt Metal.

[See Anti-Friction Metal.]

Bags, Rope and Twine.

Royal Bag Mfg. Co., Charleston, S. C.

John T. Bailey & Co., Philadelphia, Pa.

Bankers and Brokers.

Hambleton & Co., Baltimore, Md.
North American Trust Co., New York, N. Y.
Maryland Casualty Co., Baltimore, Md.
F. M. Stafford & Co., Chattanooga, Tenn.
Maryland Trust Co., Baltimore, Md.
Exchange Bkg. & Trust Co., Charleston, S. C.
John L. Williams & Sons, Richmond, Va.
Middendorf, Oliver & Co., Baltimore, Md.

Barrel Mch'y.

[See Woodworking Mch'y.]

Bars, Billets.

(Soft Steel.)

Aetna Stand. Iron & Steel Co., Bridgeport, O.

Bearings.

Graphite Lubricating Co., Bound Brook, N. J.
Holmes Fibre Graphite Mfg. Co., Phila., Pa.
N. J. Amer. Metal Co., Long Island City, N. Y.

Belt.

Hammacher, Schlemmer & Co., New York.
The Bradford Belting Co., Cincinnati, O.
Eureka Fire Hose Co., New York, N. Y.
J. E. Rhoads & Sons, Wilmington, Del.
Chicago Belting Co., Chicago, Ill.
Alexander Bros., Philadelphia, Pa.
Chesapeake Belting Co., Baltimore, Md.
Jewell Belting Co., Hartford, Conn.
I. B. Williams & Sons, Dover, N. H.
N. J. Car Spring & Rub. Co., Jersey City, N. J.
Chas. A. Schleren & Co., New York, N. Y.
Boston Belting Co., Boston, Mass.
E. M. Freese & Co., Gallon, O.
Cameron & Barkley Co., Charleston, S. C.
Main Belting Co., Philadelphia, Pa.
Gandy Belting Co., Baltimore, Md.
H. W. Caldwell & Son Co., Chicago, Ill.
American Supply Co., Providence, R. I.

Belt Lacing and Fasteners.

Sawyer Hard. & Sup. Co., Pawtucket, R. I.
J. M. Hayden & Co., Grand Rapids, Mich.
American Supply Co., Providence, R. I.
Samson Steel Belt Hook Co., Phila., Pa.

Belt Preserver.

J. E. Rhoads & Sons, Wilmington, Del.

Bicycles.

Pope Manufacturing Co., Hartford, Conn.
Y. A. Mead Cycle Co., Chicago, Ill.
Maryland Mfg. & Const. Co., Baltimore, Md.

Bicycle Machinery and Tools.

[See Tools.]

Blower.

(Argand Steam.)

McClave, Brooks & Co., Scranton, Pa.
Blowers and Exhaust Fans.

B. F. Sturtevant Co., Boston, Mass.

Buffalo Forge Co., Buffalo, N. Y.

Boiler Appliances.

A. A. Griffing Iron Co., New York, N. Y.
Crosby St. Gate & Valve Co., Boston, Mass.

Boiler Fronts and Fittings.

[See Boilers.]

Boilers.

[See Machinery.]

A. A. Griffing Iron Co., New York, N. Y.
Mulhead Machine Works, Pittston, Pa.
The Murray Iron Works Co., Burlington, Ia.
Ames Iron Works, Oswego, N. Y.
Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.
Standard Saw Mill Mch'y. Co., Erie, Pa.
S. L. Holt & Co., Boston, Mass.
The Means & Fulton Iron Works, Birmingham, Ala.

The Globe Machine Works, Cincinnati, O.
Maryland Mfg. & Const. Co., Baltimore, Md.
York Mfg. Co., York, Pa.
Ritter-Conley Co., Pittsburg, Pa.
Wallace Stebbins, Baltimore, Md.
Valdosta Fdy. & Mch. Co., Valdosta, Ga.
Bromell, Schmidt & Co., Ltd., York, Pa.
A. B. Farquhar Co., Ltd., York, Pa.

Boils, Rivets and Nuts.

Robt. Wetherill & Co., Chester, Pa.
Alabama Bridge & Bolt Co., Birmingham, Ala.
Hardley's Boiler Works, Montgomery, Ala.
Birmingham Boiler Wks., Birmingham, Ala.
Struthers, Wells & Co., Warren, Pa.
E. Keeler Co., Williamsport, Pa.
Lombard Iron Wks. & Sup. Co., Augusta, Ga.
James Leffel & Co., Springfield, O.
Pittsburg Locomotive Works, Pittsburg, Pa.
Smith-Courtney Co., Richmond, Va.
The Bailey-Lebby Co., Charleston, S. C.
Union Iron Works Co., Selma, Ala.
Charlotte Machine Co., Charlotte, N. C.
Mecklenburg Iron Works, Charlotte, N. C.
Cameron & Barkley Co., Charleston, S. C.
Babcock & Wilcox Co., New York, N. Y.
Tudor Boiler Mfg. Co., Cincinnati, O.
Valk & Murdoch Iron Wks., Charleston, S. C.
Frick Co., Waynesboro, Pa.
M. Zier & Co., New Albany, Ind.

Bricks.

The Powhatan Clay Mfg. Co., Richmond, Va.

Brick and Clayworking Machinery and Supplies.

J. C. Steele & Sons, Statesville, N. C.
George Carnell, Philadelphia, Pa.
E. M. Freese & Co., Gallon, O.

Bridges.

Janney & Steinmetz, Philadelphia, Pa.
Alabama Bridge & Bolt Co., Birmingham, Ala.

Buckets.

(Self-dumping Coal and Ore.)

R. D. Seidel, Reading, Pa.
G. L. Stuebner Iron Wks., L. Island City, N. Y.

Building Stone.

T. L. Fossick Co., Sheffield, Ala.

Burlaps.

Royal Bag Mfg. Co., Charleston, S. C.
John T. Bailey & Co., Philadelphia, Pa.

Cannamakers' Machinery.

Ningara Machine & Tool Wks., Buffalo, N. Y.
Toledo Machine & Tool Co., Toledo, O.
Maryland Mfg. & Const. Co., Baltimore, Md.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.

Canning Machinery.

Ningara Machine & Tool Wks., Buffalo, N. Y.
A. K. Robbins & Co., Baltimore, Md.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.

Capstans.

(Hand and Steam.)

American Ship Windlass Co., Providence, R. I.

Carbon Black Diamonds.

(For Diamond Drills.)

The S. Dessau Co., New York, N. Y.

Card Clothing.

American Supply Co., Providence, R. I.

Cars.

(Mine and Dump.)

Jackson Manufacturing Co., Harrisburg, Pa.
G. L. Stuebner Iron Wks., L. Island City, N. Y.
Climax Mfg. Co., Corry, Pa.
Birmingham Bolt & Wks. Co., Birmingham, Ala.
Geo. Peacock, Selma, Ala.

Cars.

(Passenger and Freight.)

[See Railroad Equipment and Supplies.]

Car-Couplers.

Chester Steel Castings Co., Philadelphia, Pa.

Car Seals.

(Lead.)

Theo. Hiertz & Son, St. Louis, Mo.

Car Springs.

N. J. Car Spring & Rub. Co., Jersey City, N. J.
Boston Belting Co., Boston, Mass.

Car Wheels and Axles.

Geo. Peacock, Selma, Ala.

Castings.

(Brass and Bronze.)

The Lunkenheimer Co., Cincinnati, O.
Newburgh Ice Machine & Engine Co., Newburgh, N. Y.

Castings.

(Copper.)

Mitchell Tempered Copper Co., Corry, Pa.

Castings.

(Crucible Chrome Steel.)

Chrome Steel Works, Brooklyn, N. Y.

Castings.

(Iron.)

A. A. Griffing Iron Co., New York, N. Y.
High Point Mch. Works, High Point, N. C.
The Vulcan Works, Chester, Pa.
K. D. Wood & Co., Philadelphia, Pa.
Newburgh Ice Machine & Engine Co., Newburgh, N. Y.
McLanahan & Stone, Hollidaysburg, Pa.

Castings.

(Malleable Iron and Steel.)

Chester Steel Castings Co., Chester, Pa.

Ceilings.

Cincinnati Corrugating Co., Piqua, O.

Cement.

Maryland Cement Co., Baltimore, Md.
Southeastern Lime & C. Co., Charleston, S. C.
Wm. M. Bird & Co., Charleston, S. C.
Commercial Wood & Cement Co., Phila., Pa.
C. M. Gilbert & Co., Savannah, Ga.

Chains.

The Jeffrey Mfg. Co., Columbus, O.

Chemists.

J. Ross Hanahan, Charleston, S. C.
Otto Meyer, Richmond, Va.
Lucius P. Brown, Nashville, Tenn.
H. Dunbar & Son, Buffalo, N. Y.
N. P. Pratt Laboratory, Atlanta, Ga.
Dr. Henry Froehling, Richmond, Va.
John Sanderson, Middlesborough, Ky.

Chucks.

Morse Twist Drill & Mch. Co., New Bedford, Mass.

Clamps.

Chas. H. Bealy & Co., Chicago, Ill.

Clocks.

(Watchman's and Town.)

Fairmount Mch. Co., Philadelphia, Pa.
Chas. H. Bealy & Co., Chicago, Ill.

Clutches.

(Friction.)
Christiana Machine Co., Christiansa, Pa.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.

Coal.

Davis Coal & Coke Co., Philadelphia, Pa.
The Standard Coal Co., Brookwood, Ala.
Castner, Curran & Bullitt, Philadelphia, Pa.

Coke.

Davis Coal & Coke Co., Philadelphia, Pa.
The Standard Coal Co., Brookwood, Ala.

Commutator Bars and Segments.

F. E. Homer & Co., Cleveland, O.
Mitchell Tempered Copper Co., Corry, Pa.

Contractors.

(Railway.)
Charles McFadden, Jr., Philadelphia, Pa.
G. W. Chance, Philadelphia, Pa.
Smethurst & Allen, Philadelphia, Pa.

Contractors and Builders.

C. H. Norton, Durham, N. C.
Gulfoux & Blanc, New Iberia, La.
Wm. A. Chapman & Co., Providence, R. I.
James Stewart & Co., St. Louis, Mo.

Contractors and Builders' Supplies.

Gulfoux & Blanc, New Iberia, La.
Ritter-Conley Co., Pittsburg, Pa.
Wrightsville Hardware Co., Wrightsville, Pa.
Sam'l H. French & Co., Philadelphia, Pa.

Contractors.

(Prospecting.)

H. P. Simpson, Scranton, Pa.

Contractors' Machinery and Supplies.

[See Hoisting Machinery.]
Lambert Hoisting Eng. Co., Newark, N. J.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Geo. Peacock, Selma, Ala.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Marion Steam Shovel Co., Marion, O.

Conveying Machinery.

Brown Holst & Con. Mch. Co., Cleveland, O.
W. J. Clark Co., Salem, O.
Walker & Elliott, Wilmington, Del.
H. W. Caldwell & Son Co., Chicago, Ill.
McLanahan & Stone, Hollidaysburg, Pa.
The Jeffrey Mfg. Co., Columbus, O.
Link-Belt Eng'g Co., Nicetown (Phila.), Pa.

Copper.

Theo. Hiertz & Son, St. Louis, Mo.

Coppersmiths.

Wilmington Iron Works, Wilmington, N. C.
Birmingham Boiler Works, Birmingham, Ala.

Corn Mill Machinery.

J. R. Aising Co., New York, N. Y.
Sprout, Waldron & Co., Muncy, Pa.
B. F. Starr & Co., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

Corrugated Iron.

[See Roofing and Siding.]

Cotton Hose.

Eureka Fire Hose Co., New York, N. Y.
N. J. Car Spring & Rub. Co., Jersey City, N. J.
Boston Belting Co., Boston, Mass.

Cotton Compresses.

The Vulcan Works, Chester, Pa.

Cotton Gin Machinery.

Brown Cotton Gin Co., New London, Conn.
Carver Cot. Gin Co., E. Bridgewater, Mass.
Valk & Murdoch Iron Wks., Charleston, S. C.

Cotton Mill Mch'y.

[See Textile Mch'y.]
Fairmount Machine Co., Philadelphia, Pa.
J. A. Goudy & Son, Providence, R. I.
Crompton & Knowles Loom Works, Worcester, Mass.

Cottonseed Oil Machinery.

J. R. Aising Co., New York, N. Y.
G. H. Bushnell Press Co., Thompson's Conn.
Sturtevant Mill Co., Boston, Mass.

Cottonseed Products.

Stillwell-Bierce & Smith-Valley Co., Dayton, O.
Buckeye Iron and Brass Works, Dayton, O.
Carver Cot. Gin Co., E. Bridgewater, Mass.
Cardwell Machine Co., Richmond, Va.

Covers.

(Gutter and Inlet.)

George M. Pierce, Cleveland, O.

Covering.

(Asbestos Magnesia for Pipes and Boilers.)
A. A. Griffing Iron Co., New York, N. Y.
H. W. Johns Manufacturing Co., New York, N. Y.
Valk & Murdoch Iron Wks., Charleston, S. C.

Covers.

(Rollers and Clearers.)

American Supply Co., Providence, R. I.

Cranes.

(Traveling.)
Chambersburg Eng. Co., Chambersburg, Pa.
The Case Manufacturing Co., Columbus, O.
Brown Holst & Con. Mch. Co., Cleveland, O.

Cranks.

Chester Steel Castings Co., Philadelphia, Pa.

Creosoted Lumber.

West Pascagoula Creosote Works, West Pascagoula, Fla.
Fernandina Oil & Creosote Wks., Fernand., Fla.

Crucibles.

R. B. Seidel, Philadelphia, Pa.

Crushers.

(Corn and Cob.)

Munson Bros., Utica, N. Y.

The Foss Mfg. Co.

Springfield, O.

Crushing and Pulverizing Mch'y.

Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.
J. S. & G. F. Simpson, Brooklyn, N. Y.
Sprout, Waldron & Co., Muncy, Pa.
Sturtevant Mill Co., Boston, Mass.
Foss Mfg. Co., Springfield, O.
Bradley Pulverizer Co., Boston, Mass.

Crossers.

(Rollers and Clearers.)

J. R. Aising Co., Incorp., New York, N. Y.

Dado Heads.

Huther Bros., Rochester, N. Y.

Die Forgings and Castings.

Chrome Steel Works, Brooklyn, N. Y.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.

Dies for Sheet-Metal Workers.

The Tampograph Co., Wilmington, Del.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Toledo Machine & Tool Co., Toledo, O.
The E. S. Stiles Press Co., Watertown, N. Y.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.
Chas. H. Bealy & Co., Chicago, Ill.

Door Hangers.

(Trolley Track.)

Cronk Hanger Co., Elmira, N. Y.
Coburn Trol. Track Mfg. Co., Holyoke, Mass.

Dredges and Excavators.

Marion Steam Shovel Co., Marion, O.

Drills.

(Prospecting.)

H. P. Simpson, Scranton, Pa.
Mulhead Machine Works, Pittston, Pa.
American Diamond Rock Drill Co., New York, N. Y.
Sullivan Machinery Co., Chicago, Ill.

Drills.

\$1,100

lost in three days because he wanted his old traps to wear out before he put in the "Heintz"—a mistake one man made, resulting in a bursting of the cylinder head. Other steam traps "wear out" with a suddenness that causes damage—the repairs cost more than would all the traps used in a lifetime. The "Heintz" is a perfect trap—never wears out—never, under any circumstances, allows the water to back up. It works under all conditions. Our Booklet "J" tells about it.



William S. Haines
Company,
136 South Fourth Street,
Philadelphia.

"The Heintz—the best—tho' it has imitators."

COAL OR COKE



Steel Charging BARROWS.

EXTRA HEAVY. Write for Price List and Catalogue. LARGELY USED.

JACKSON MFG. CO., Harrisburg, Pa.
Barrows for Railroads, Mills, Furnaces, Contractors, Etc.



Nonpareil Anti-Friction Metal.

Best Anti-Friction Metal for all machinery bearings.
For high speed and heavy crushing weight
it has no equal.

THEO. HIERTZ & SON, Sole Manufacturers,
30th St. and Park Avenue, ST. LOUIS, MO.

Manufacturers all grades Rabbitt Metals. Solder, Bar Tin, Bar Lead, Lead Car Seals, Pig Tin, Pig Lead, Antimony, Copper, Spelter, etc.



METALS PERFORATED AS REQUIRED FOR

SCREENS OF ALL KINDS

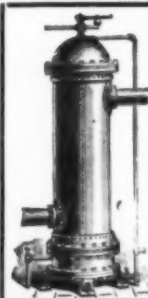
AND FOR USE IN

Milling and Mining Machinery
Reduction and Concentrating Works
Woolen, Cotton, Paper and Pulp Mills
Rice, Flour and Cottonseed Oil Mills
Sugar and Malt Houses
Distilleries, Filter Presses

Stone, Coal and Ore Screens
Stamp Battery Screens
Brick and Tile Works, Filters
Spark Arresters, Gas and Water Works
Oil, Gas and Vapor Stoves
Coffee Machinery, etc., etc.

Standard Sizes Perforated Tin and Brass Always in Stock.

Main Office and Works: 234 to 236 North Union Street, Chicago, Ill., U.S.A.
Eastern Office: No. 284 Pearl Street, New York



Though You Have Money to Burn Why burn it in your boilers when you can save one-half with

Bundy
TRADE MARK

Feed Water Heaters.
Gravity Pumps.

Steam Traps.
Steam and Oil Separators.

Safety Water Columns.
Exhaust Heads.

A. A. GRIFFING IRON CO.

66-68 CENTRE STREET, NEW YORK.
PHILADELPHIA. BOSTON. JERSEY CITY, N. Y.
Book M R Free, "Sure Cure for Power Wastage"

BUILDERS OF PLAIN AND FANCY
LOOMS
CROMPTON & KNOWLES
WORCESTER, MASS.
FOR WEAVING EVERY KNOWN TYPE OF TEXTILE FABRIC.
BRANCH WORKS, PROVIDENCE, R. I.

CRUCIBLES,

Stoppers and Nozzles,
R. B. SEIDEL,
1324-1334 Callowhill St Philadelphia, Pa.

Conveying, Elevating and Power-Transmitting Machinery

H. W. CALDWELL & SON CO.

SPECIALTIES FOR COTTONSEED-OIL MILLS,
FLOUR AND RICE MILLS,
AND GRAIN ELEVATORS.

GENERAL MACHINISTS,
127, 129, 131, 133 West Washington St.
CHICAGO.

CALDWELL STEEL CONVEYOR.

Manufactured exclusively by us at Chicago, with latest improvements.



CALDWELL CORRUGATED SEAMLESS
STEEL ELEVATOR BUCKETS.

LINK BELTING.
SPROCKET WHEELS.
COTTON BELTING.
RUBBER BELTING.
LEATHER BELTING.
BELT CLAMPS.
POWER GRAIN SHOVELS.
ELEVATOR BOLTS.
ELEVATOR BUCKETS.
CONCRETE MIXERS.

FRICION CLUTCHES.
JAW CLUTCHES.
COUPLINGS.
FLEXIBLE SPOUTS.
GEARING (all kinds).
GRAIN SCOOPS.
ELEVATOR BOOTS.
COWSWELL MILLS.
HANGERS.
PERFORATED METALS.

PILLOW BLOCKS.
IRON PULLEYS.
WOOD PULLEYS.
SHAFTING.
SET COLLARS.
SWIVEL SPOUTS.
TAKE-UP BOXES.
TURN HEAD SPOUTS.
WIRE CLOTH.



CLASSIFIED INDEX OF ADVERTISERS.

For ALPHABETICAL INDEX See Page 320.

The Vulcan Works, Chester, Pa.
 Ames Iron Works, Oswego, N. Y.
 Standard Saw Mill Machy. Co., Erie, Pa.
 S. L. Holt & Co., Boston, Mass.
 Wallace Stebbins, Baltimore, Md.
 B. F. Sturtevant Co., Boston, Mass.
 The Globe Machine Works, Cincinnati, O.
 Maryland Mfg. & Const. Co., Baltimore, Md.
 York Mfg. Co., York, Pa.
 Buckeye Engine Co., Salem, O.
 A. B. Farquhar Co., Ltd., York, Pa.
 Robt. Wetherill & Co., Chester, Pa.
 American Engine Co., Bound Brook, N. J.
 Buffalo Forge Co., Buffalo, N. Y.
 Westinghouse Machine Co., Pittsburgh, Pa.
 The Ball Engine Co., Erie, Pa.
 Newport News Shipbuilding & Dry Dock Co., Newport News, Va.
 Struthers, Wells & Co., Warren, Pa.
 W. D. Forbes & Co., Hoboken, N. J.
 Newburg Ice Machine & Engine Co., Newburgh, N. Y.
 James Leffel & Co., Springfield, O.
 Smith-Courtney Co., Richmond, Va.
 Lidgerwood Mfg. Co., New York, N. Y.
 Union Iron Works Co., Selma, Ala.
 The Bailey-Lebby Co., Charleston, S. C.
 Charlotte Machine Co., Charlotte, N. C.
 Mecklenburg Iron Works, Charlotte, N. C.
 Remington Machine Co., Wilmington, Del.
 Cameron & Barkley Co., Charleston, S. C.
 Frick Co., Waynesboro, Pa.
 Valk & Murdoch Iron Wks., Charleston, S. C.
Engines. (Gas and Gasoline.)
 Foss Gas Engine Co., Springfield, O.
 Lambert Gas & Gaso. Eng. Co., Anderson, Ind.
 Columbus Machine Co., Columbus, O.
 Springfield Gas Engine Co., Springfield, O.
 J. W. Ruger & Co., Buffalo, N. Y.
 Otto Gas Engine Works, Philadelphia, Pa.
Engines. (Oil.)
 Priestman & Co., Inc., Philadelphia, Pa.
Engravers.
 Brown-Bierce Co., Dayton, O.
 Baltimore Engraving Co., Baltimore, Md.
Envelopes.
 Atlanta Envelope Co., Atlanta, Ga.
Exhaust Heads.
 A. A. Griffing Iron Co., New York, N. Y.
Fans. (Electric Ceiling.)
 Robbins & Meyers Co., Springfield, O.
Fans. (Ventilating.)
 B. F. Sturtevant Co., Boston, Mass.
 Buffalo Forge Co., Buffalo, N. Y.
Fans. (Water Motor.)
 The Schneider Mfg. Co., Cleveland, O.
Feed Water Heaters.
 A. A. Griffing Iron Co., New York, N. Y.
 Frontier Iron Works, Detroit, Mich.
 S. L. Holt & Co., Boston, Mass.
 Pittsburgh Feed-Water Heater & Engineering Co., Pittsburgh, Pa.
 Warren Webster & Co., Camden, N. J.
 Jas. Berryman, Philadelphia, Pa.
 National Pipe Bend. Co., New Haven, Conn.
 Stillwell-Bierce & Smith-Valle Co., Dayton, O.
Feltling. (Hair.)
 Baeder, Adamson & Co., Philadelphia, Pa.
Fencing.
 Ellis & Helfenberger, Indianapolis, Ind.
 Dow Wire Works Co., Louisville, Ky.
 Dufur & Co., Baltimore, Md.
 Ludlow-Saylor Wire Co., St. Louis, Mo.
Fertilizer Machinery.
 J. R. Aising Co., New York, N. Y.
 G. H. Dempwolf & Co., York, Pa.
 Foss Mfg. Co., Springfield, O.
 Bradley Pulverizer Co., Boston, Mass.
 Sturtevant Mill Co., Boston, Mass.
 The Bailey-Lebby Co., Charleston, S. C.
 Cameron & Barkley Co., Charleston, S. C.
 Valk & Murdoch Iron Wks., Charleston, S. C.
 Walker & Elliott, Wilmington, Del.
Files.
 G. & H. Barnett Co., Philadelphia, Pa.
 Chas. H. Besly & Co., Chicago, Ill.
 Nicholson File Co., Providence, R. I.
Fire Brick.
 Pomona Terra Cotta Co., Pomona, N. C.
 H. Stevens' Sons Co., Macon, Ga.
 Powhatan Clay Mfg. Co., Richmond, Va.
Fire Extinguishers.
 L. B. Brickenstein, Salem, N. C.
 The Bailey-Lebby Co., Charleston, S. C.
 General Fire Exting. Co., Providence, R. I.
 Charlotte Machine Co., Charlotte, N. C.
Flour and Grist Mill Machinery and Supplies.
 J. R. Aising Co., New York, N. Y.
 Norrish, Burnham & Co., Inc., Glen Rock, Pa.
 Nordyke & Marmore Co., Indianapolis, Ind.
 Munson Bros., Utica, N. Y.
 Sprout, Waldron & Co., Muncy, Pa.
 R. F. Starr & Co., Baltimore, Md.
 Sturtevant Mill Co., Boston, Mass.
 W. J. Clark Co., Salem, O.
 Union Iron Works, Selma, Ala.
 Wolf Co., Chambersburg, Pa.
 H. W. Caldwell & Son Co., Chicago, Ill.
Flue Cleaners.
 Thompson & Bushnell, New York, N. Y.
 J. W. Paxson Co., Philadelphia, Pa.
 Buffalo Forge Co., Buffalo, N. Y.
 Viaduct Brass Works, Cleveland, O.
Forges.
 B. F. Sturtevant Co., Boston, Mass.
Forgings. (Steel.)
 Janney & Steinmetz, Philadelphia, Pa.
Foundry Equipments and Supplies.
 J. W. Paxson & Co., Philadelphia, Pa.
Fuel Economizer.
 Broomell, Schmidt & Co., Ltd., York, Pa.
 The Fuel Economizer Co., Mattawan, N. Y.
Fuel Gas Producers.
 R. D. Wood & Co., Philadelphia, Pa.
Furnace Builders.
 Edw. E. Erickson, Pittsburgh, Pa.
 Miller Bros. & Co., Pittsburgh, Pa.
 Alabama Bridge & Boll. Co., Birmingham, Ala.
Gages. (Recording) and Counters.
 Crosby St. Gage & Valve Co., Boston, Mass.
Gas and Steam Fitters' Tools.
 Henry B. Panoast & Co., Philadelphia, Pa.
 D. Saunders' Sons, Yonkers, N. Y.
Gearing.
 Christiansa Machine Co., Christiansa, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 The Jeffrey Mfg. Co., Columbus, O.

Morse, Williams & Co., Philadelphia, Pa.
 Chester Steel Castings Co., Phila., Pa.
Glass. (Art. Stained.)
 L. Grosse Art Glass Works, Pittsburgh, Pa.
Glass. (Plate.)
 Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Glass. (Floor and Skylight.)
 Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Grates and Grate Bars.
 Earl & Wilson, Gastonia, N. C.
 The Globe Machine Works, Cincinnati, O.
 Hartley's Boiler Works, Montgomery, Ala.
 McClave, Brooks & Co., Scranton, Pa.
Grain Elevator Supplies.
 W. J. Clark Co., Salem, O.
 H. W. Caldwell & Son Co., Chicago, Ill.
 Jeffrey Mfg. Co., Columbus, O.
 Link-Belt Eng'g Co., Nicetown (Phila.), Pa.
Graphite.
 Graphite Lubricating Co., Bound Brook, N. J.
 Holmes Fibre Graphite Mfg. Co., Phila., Pa.
 Jos. Dixon Crucible Co., Jersey City, N. J.
Grater. (Household.)
 West Manufacturing Co., Buffalo, N. Y.
Grease Cups.
 Lunkenheimer Co., Cincinnati, O.
Grinding and Polishing Mch.
 The Carborundum Co., Niagara Falls, N. Y.
 Hanson & Van Winkle Co., Newark, N. J.
 Hammacher, Schlemmer & Co., New York, N. Y.
 The Tante Co., Stroudsburg, Pa.
 Scranton Corundum & Emery Wheel Works, Scranton, Pa.
 C. N. Cady, Canastota, N. Y.
 Vitrifed Wheel Co., Westfield, Mass.
 Sterling Emery Wheel Co., Tiffin, O.
 Norton Emery Wheel Co., Worcester, Mass.
Groovers.
 Huther Bros., Rochester, N. Y.
Gymnasium and Athletic Supplies.
 A. J. Alford Sporting Goods Co., Balto., Md.
Hammers. (Steam and Power.)
 Jenkins & Lingle, Bellefonte, Pa.
 Chambersburg Eng. Co., Chambersburg, Pa.
 Toledo Machine & Tool Co., Toledo, O.
 The E. S. Stiles Press Co., Watert'n, N. Y.
 E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.
 J. M. Robinson & Co., Cincinnati, O.
Handle Mch. (See Woodwork'g Mch.)
 J. A. Fay & Co., Cincinnati, O.
 The Egan Co., Cincinnati, O.
 Ober Lathe Co., Chagrin Falls, O.
 Trevor Mfg. Co., Lockport, N. Y.
Hardware Machinery.
 E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.
Hardware Specialties.
 Chas. H. Besly & Co., Chicago, Ill.
 Wrightsville Hardware Co., Wrightsville, Pa.
 W. J. Clark Co., Salem, O.
 Cronk Hanger Co., Elmira, N. Y.
 Covert Mfg. Co., West Troy, N. Y.
Hardwoods.
 Richard P. Baer & Co., Baltimore, Md.
 Price & Heald, Baltimore, Md.
 Price & Co., Baltimore, Md.
 E. D. Albro Co., Cincinnati, O.
Heating Apparatus.
 A. A. Griffing Iron Co., New York, N. Y.
 L. B. Brickenstein, Salem, N. C.
 Warren Webster & Co., Camden, N. J.
 Broomell, Schmidt & Co., Ltd., York, Pa.
 The Peck-Hammond Co., Cincinnati, O.
 T. H. Brooks & Co., Cleveland, O.
Hoisting Machinery.
 The Case Manufacturing Co., Columbus, O.
 The Murray Iron Works Co., Burlington, Ia.
 Joseph F. McCoy Co., New York, N. Y.
 The Jeffrey Mfg. Co., Columbus, O.
 Lambert Hoisting Eng. Co., Newark, N. J.
 Contractors' Plant Mfg. Co., Buffalo, N. Y.
 Brown Holst & Co. Mch. Co., Cleveland, O.
 Lidgerwood Mfg. Co., New York, N. Y.
 John F. Byers Machine Co., Ravenna, O.
 Sullivan Machinery Co., Chicago, Ill.
Hose.
 The Bradford Belting Co., Cincinnati, O.
 Eureka Fire Hose Co., New York, N. Y.
 N. J. Car Spring & Rub. Co., Jersey City, N. J.
 Boston Belting Co., Boston, Mass.
Hose. (Cotton.)
 Eureka Fire Hose Co., New York, N. Y.
 N. J. Car Spring & Rub. Co., Jersey City, N. J.
 Boston Belting Co., Boston, Mass.
Hose Reel.
 The Hartzell Novelty Works, Alliance, O.
Hotels.
 New Atlantic Hotel, Norfolk, Va.
Hunting and Sporting Supplies.
 A. J. Alford Sporting Goods Co., Balto., Md.
Hydrants.
 Chapman Valve Mfg. Co., Indian Orchard, Mass.
 Ludlow Valve Mfg. Co., Troy, N. Y.
 R. D. Wood & Co., Philadelphia, Pa.
Ice-Making Machinery.
 The Vulcan Works, Chester, Pa.
 The Murray Iron Works Co., Burlington, Ia.
 John Featherstone's Sons, Chicago, Ill.
 York Mfg. Co., York, Pa.
 The Fred W. Wolf Co., Chicago, Ill.
 Lombard Iron Wks. & Sup. Co., Augusta, Ga.
 Stillwell-Bierce & Smith-Valle Co., Dayton, O.
 Newburgh Ice Machine & Engine Co., Newburgh, N. Y.
 Remington Machine Co., Wilmington, Del.
 Frick Co., Waynesboro, Pa.
Ice & Refrigerating Mch. Supplies.
 The Klechler Mfg. Co., Cincinnati, O.
 The Fred W. Wolf Co., Chicago, Ill.
Injectors.
 The Lunkenheimer Co., Cincinnati, O.
 Jenkins Bros., New York, N. Y.
 Penberthy Injector Co., Detroit, Mich.
Insurance.
 Maryland Casualty Co., Baltimore, Md.
 Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
Iron.
 Janney & Steinmetz, Philadelphia, Pa.
 Apollo Iron & Steel Co., Pittsburgh, Pa.
Iron Brokers.
 Justice Cox, Jr., Philadelphia, Pa.
 Edward J. Etting, Philadelphia, Pa.

Iron Buildings and Roofs.
 Ritter-Conley Co., Pittsburgh, Pa.
 James Stewart & Co., St. Louis, Mo.
Iron Chimneys.
 M. Zell & Co., New Albany, Ind.
 Struthers, Wells & Co., Warren, Pa.
 York Mfg. Co., York, Pa.
Ironworking Machinery.
 The American Tool Works Co., Cincinnati, O.
 The Means & Fulton Iron Works, Birmingham, Ala.
 Toledo Machine & Tool Co., Toledo, O.
 The Pratt & Whitney Co., Hartford, Conn.
 E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.
 W. D. Forbes & Co., Hoboken, N. J.
 Bradford Mill Co., Cincinnati, O.
 Fifeid Tool Co., Lowell, Mass.
 Chas. H. Besly & Co., Chicago, Ill.
 J. M. Robinson & Co., Cincinnati, O.
 Draper Mch. Tool Co., Worcester, Mass.
 Niagara Machine & Tool Works, Buffalo, N. Y.
Iron and Steel Plates.
 Janney & Steinmetz, Philadelphia, Pa.
Jacks. (Hydraulic-Lifting.)
 Joseph F. McCoy Co., New York, N. Y.
Knitting Machinery.
 Excelsior Knitting Mch. Co., Allentown, Pa.
 Scott & Williams, Philadelphia, Pa.
 Branson Machine Co., Philadelphia, Pa.
Knuckles for Car-Couplers.
 Chester Steel Castings Co., Philadelphia, Pa.
Lamps. (Arc and Incandescent.)
 J. M. Zamoiski & Co., Baltimore, Md.
 The United Electrical Imp. Co., Phila., Pa.
 Fort Wayne Elec. Corp., Fort Wayne, Ind.
 Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.
Lands.
 Johnston & Nelson, Baltimore, Md.
 Sect'y Chamber of Com., Wilmington, N. C.
 E. Willis, Charleston, S. C.
 Radford Board of Trade, Radford, Va.
 A. W. Taylor Land & Lumber Co., Summerville, S. C.
 Exchange Bank & Trust Co., Charleston, S. C.
Lath. (Expanded Metal Steel.)
 Southern Expanded Metal Co., Washington, D. C. (See advt. for other addresses.)
Laundry Machinery.
 Wilson Laundry Mch. Co., Columbia, Pa.
 S. H. Sinclair Co., Chicago, Ill.
Lead. (Sheet.)
 James Robertson Mfg. Co., Baltimore, Md.
Lead and Tin. (Pig.)
 Theo. Helts & Son, St. Louis, Mo.
Lights. (Sidewalk.)
 T. H. Brooks & Co., Cleveland, O.
Lights. (Torch-Contractors.)
 Wells Light Mfg. Co., New York, N. Y.
Lime.
 S. E. Lime & Cement Co., Charleston, S. C.
Locks. (Bank and Vault.)
 Cincinnati Safe & Lock Co., Cincinnati, O.
Locomotive Builders. (See Railroad Equipment and Supplies.)
 Climax Mfg. Co., Corry, Pa.
 Pittsburgh Locomotive Works, Pittsburgh, Pa.
 H. K. Porter & Co., Pittsburgh, Pa.
 Baldwin Locomotive Wks., Philadelphia, Pa.
Looms and Weaving Machinery.
 Fairmount Machine Co., Philadelphia, Pa.
 Crompton & Knowles Loom Works, Worcester, Mass.
 Mason Machine Works, Taunton, Mass.
 Kilburn, Lincoln & Co., Fall River, Mass.
 Charlotte Machine Co., Charlotte, N. C.
 American Supply Co., Providence, R. I.
 Draper Co., Hopedale, Mass.
 Lowell Machine Shop, Boston, Mass.
 Pettie Mch. Wks., Newton Upper Falls, Mass.
 Providence Machine Co., Providence, R. I.
Lubricators and Oil Cups.
 Detroit Lubricator Co., Detroit, Mich.
 Crosby St. Gage & Valve Co., Boston, Mass.
 The Lunkenheimer Co., Cincinnati, O.
 Chas. H. Besly & Co., Chicago, Ill.
 Penberthy Injector Co., Detroit, Mich.
Lumber.
 Price & Heald, Baltimore, Md.
 Price & Co., Baltimore, Md.
 Rich. P. Baer & Co., Baltimore, Md.
 The E. D. Albro Co., Cincinnati, O.
Machinery. (Marine Driving.)
 Brown & Sharpe Mfg. Co., Providence, R. I.
 Robert F. Adams, New York, N. Y.
 The American Tool Works Co., Cincinnati, O.
 Fairmount Machine Co., Philadelphia, Pa.
 Mulhead Machine Works, Pittston, Pa.
 H. L. Beach, Montrose, Pa.
 Valdosta Fdy. & Mch. Co., Valdosta, Ga.
 The Pratt & Whitney Co., Hartford, Conn.
 Chattanooga Mch. Co., Chattanooga, Tenn.
 Cordesman Machine Co., Cincinnati, O.
 Baxter D. Whitney, Winchendon, Mass.
 The Wright Co., Lowell, Mass.
 Bradford Mill Co., Cincinnati, O.
 Fifeid Tool Co., Lowell, Mass.
 The Bailey-Lebby Co., Charleston, S. C.
 J. A. Fay & Co., Cincinnati, O.
 The Egan Co., Cincinnati, O.
 Smith-Courtney Co., Richmond, Va.
 R. D. Wood & Co., Philadelphia, Pa.
Machinery. (Special.)
 The Tampograph Co., Wilmington, Del.
 J. R. Aising Co., New York, N. Y.
 Baxter D. Whitney, Winchendon, Mass.
 E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.
Machinery and Tools. (Second-hand.)
 Corbett Mill Supply Co., Washington, D. C.
 Lyons Machinery Co., Cincinnati, O.
 Thos. P. Conard, Philadelphia, Pa.
 Robert F. Adams, New York, N. Y.
 John T. Riley, Charleston, S. C.
 S. L. Holt & Co., Boston, Mass.
 H. M. Everson, Pittsburgh, Pa.
 Thomas Carlin's Sons, Allegheny, Pa.
 Chas. E. Gregory Co., Chicago, Ill.
 Frank Toomey, Philadelphia, Pa.
 Smith-Courtney Co., Richmond, Va.

Machinists' Supplies.
 Chas. H. Besly & Co., Chicago, Ill.
Mail Chutes.
 Cutler Mfg. Co., Rochester, N. Y.
Mill Engineers.
 Corbett Mill Supply Co., Washington, D. C.
 Chas. A. M. Pray & Co., Providence, R. I.
 Haies & Ballinger, Philadelphia, Pa.
 Wm. A. Chapman & Co., Providence, R. I.
 C. R. Makepeace & Co., Providence, R. I.
Milling Machines.
 Brown & Sharpe Mfg. Co., Providence, R. I.
 The American Tool Works Co., Cincinnati, O.
 The Pratt & Whitney Co., Hartford, Conn.
Mill Supplies.
 Corbett Mill Supply Co., Washington, D. C.
 Wilmington Iron Works, Wilmington, N. C.
 J. R. Aising Co., New York, N. Y.
 J. A. Gowdy & Son, Providence, R. I.
 Lombard Iron Wks. & Sup. Co., Augusta, Ga.
 Wm. M. Bird & Co., Charleston, S. C.
 Sprout, Waldron & Co., Muncy, Pa.
 Chas. H. Besly & Co., Chicago, Ill.
 R. F. Starr & Co., Baltimore, Md.
 Smith-Courtney Co., Richmond, Va.
 W. J. Clark Co., Salem, O.
 The Bailey-Lebby Co., Charleston, S. C.
 Mecklenburg Iron Works, Charlotte, N. C.
 Queen City Supply Co., Cincinnati, O.
 Cameron & Barkley Co., Charleston, S. C.
 American Supply Co., Providence, R. I.
Minerals.
 E. Willis, Charleston, S. C.
 Alpha Paint & Mineral Co., Philadelphia, Pa.
Mining Screens.
 The Ludlow-Saylor Wire Co., St. Louis, Mo.
 McLanahan & Stone, Hollidaysburg, Pa.
 A. J. Beckley & Co., Garwood, N. J.
 Mundt & Sons, New York, N. Y.
 Harrington & King Perf'g Co., Chicago, Ill.
 The Hendrick Mfg. Co., Ltd., Carbondale, Pa.
Mixing Machinery.
 J. R. Aising Co., New York, N. Y.
 C. H. Dempwolf & Co., York, Pa.
 W. D. Dunning, Syracuse, N. Y.
 Walker & Elliott, Wilmington, Del.
Mortar Colors.
 Saml. H. French & Co., Philadelphia, Pa.
Nails. (Wire.)
 The Ludlow-Saylor Wire Co., St. Louis, Mo.
 Consolidated Steel & Wire Co., Pittsburgh, Pa.
Oils.
 Wm. M. Bird & Co., Charleston, S. C.
 Chas. H. Besly & Co., Chicago, Ill.
 Ferdinandina Oil & Cre. Wks., Ferdinandina, Fla.
 Wm. C. Robinson & Son, Baltimore, Md.
Packer. (Cement, Paint, etc.)
 The S. Howes Co., Silver Creek, N. Y.
Packing.
 The Bradford Belting Co., Cincinnati, O.
 The American Balance Slide Valve Co., Jersey Shore, Pa.
 N. J. Car Spring & Rub. Co., Jersey City, N. J.
 Boston Belting Co., Boston, Mass.
 Jenkins Bros., New York, N. Y.
Paint.
 W. W. Lawrence & Co., Pittsburgh, Pa.
 National Paint Works, Williamsport, Pa.
 Alpha Paint & Mineral Co., Philadelphia, Pa.
 Alden Speare's Sons & Co., Boston, Mass.
 The Armitage Mfg. Co., Richmond, Va.
 Standard Paint Co., New York, N. Y.
 C. S. Garrett & Son, Philadelphia, Pa.
 Wm. M. Bird & Co., Charleston, S. C.
 Samuel H. French & Co., Philadelphia, Pa.
 Joseph Dixon Crucible Co., Jersey City, N. J.
 Ferdinandina Oil & Cre. Wks., Ferdinandina, Fla.
Paint. (Asbestos Cold Water.)
 Alden Speare's Sons & Co., Boston, Mass.
Paint. (Fire-resisting.)
 Standard Paint Co., New York, N. Y.
 Alden Speare's Sons & Co., Boston, Mass.
Paper. (Roofing, Bldg., Sheathing, etc.)
 Garrett-Buchanan Co., Philadelphia, Pa.
 The Standard Paint Co., New York, N. Y.
 National Roofing & Sup. Co., Louisville, Ky.
 The Armitage Mfg. Co., Richmond, Va.
 C. S. Garrett & Son, Philadelphia, Pa.
Paper. (Sand, Emery.)
 Baeder, Adamson & Co., Philadelphia, Pa.
Papier Mache. (Capitals, Brackets, etc.)
 L. Grosse Art Glass Works, Pittsburgh, Pa.
Paving Material.
 Barber Asphalt Paving Co., New York, N. Y.
 National Roofing & Sup. Co., Louisville, Ky.
 Warren Chem. & Mfg. Co., New York, N. Y.
Perforated Metal.
 The Ludlow-Saylor Wire Co., St. Louis, Mo.
 Chas. H. Besly & Co., Chicago, Ill.
 A. J. Beckley & Co., Garwood, N. J.
 The Hendrick Mfg. Co., Ltd., Carbondale, Pa.
 Mundt & Sons, New York, N. Y.
 Harrington & King Perf'g Co., Chicago, Ill.
Phosphate Machinery.
 J. R. Aising Co., New York, N. Y.
 Walker & Elliott, Wilmington, Del.
 C. H. Dempwolf & Co., York, Pa.
 Foss Mfg. Co., Springfield, O.
 Bradley Pulverizer Co., Boston, Mass.
 Sturtevant Mill Co., Boston, Mass.
 McLanahan & Stone, Hollidaysburg, Pa.
 Valk & Murdoch Iron Wks., Charleston, S. C.
 Cameron & Barkley Co., Charleston, S. C.
 The Bailey-Lebby Co., Charleston, S. C.
Phosphate Screens.
 A. J. Beckley & Co., Garwood, N. J.
 Mundt & Sons, New York, N. Y.
 Harrington & King Perf'g Co., Chicago, Ill.
 The Hendrick Mfg. Co., Ltd., Carbondale, Pa.
 McLanahan & Stone, Hollidaysburg, Pa.
Pillow Blocks.
 Norrish, Burnham & Co., Inc., Glen Rock, Pa.
 Golden Fdy. & Mch. Co., Columbus, Ga.
Pipe. (Cast Iron and Steel.)
 R. D. Wood & Co., Philadelphia, Pa.
Pipe. (Coll.)
 National Pipe Bend. Co., New Haven, Conn.
Pipe. (Lead.)
 James Robertson Mfg. Co., Baltimore, Md.
Pipe. (Wrought Iron.)
 James Robertson Mfg. Co., Baltimore, Md.
Pipe. (Sewer and Culvert.)
 Austin White Lime Co., Austin, Texas.
 Pomona Terra Cotta Co., Pomona, N. C.
 H. Stevens' Sons Co., Macon, Ga.

ARCHITECTS, CIVIL ENGINEERS, MINING ENGINEERS, CHEMISTS, Etc.

Thorburn Reid. Richard R. Bryan.

THORBURN REID CONSULTING ELECTRICAL ENGINEERS.

Plans and specifications for Power Transmission, Utilization of Water Powers, Railway and Lighting Central Stations.

Construction Supervised.
Electrical Apparatus Designed.
120 Liberty St., New York City.
Long Distance Telephone, Cortlandt, 3708.

FRANK P. MILBURN, Architect

Furnishes plans for court houses, jails, churches, colleges, schools, city halls, fine residences, etc.
CORRESPONDENCE INVITED.

HALES & BALLINGER, ARCHITECTS AND MILL ENGINEERS,

S. W. Cor. 12th and Chesnut Streets,
PHILADELPHIA, PA.

Philadelphia references—a few of the plants recently erected as designed by us: American Baptist Publication Society; Richardson & DeLong Brothers; Caleb J. Milne; Fels & Co.; W. G. Ellis & Co.; Wm. P. Datz & Bro.

C. R. MAKEPEACE & CO.
Architects and Mill Engineers
PROVIDENCE, R. I. Plans, Specifications and Estimates furnished for Cotton & Woolen Mills

EDWARD E. ERIKSON, Engineer & Contractor, Conestoga Bldg., Pittsburg, Pa.
Builds (complete) Steel Plants, Sheet and Tin Plate Mills, Open Hearth, Crucible, Heating, Annealing Furnaces and Soaking Pits. Erikson Water Sealed Gas-Producer produces gas under tubular boilers, saving 35¢ fuel; no smoke. Steel Buildings for all purposes.

GEORGE F. GLASKIN & CO. Steam and Water Heating Apparatus.
Mechanical Engineers and Contractors, Complete Power Plants Erected.
40 W. Forsyth St. ATLANTA, GA. Steam Supplies.

St. Louis. Heavy Masonry Contractors. Buffalo.

James Stewart & Co.

Railway Buildings, Manufacturing Plants and Grain Elevators.

WATER GUARANTEED.

HENRY E. KNOX, Jr., Consulting and Hydraulic Engineer.
Artesian and Tube Wells a specialty. General Water Works, Construction, Surveys, Plans and Estimates. Borings made for Architects, Bridge and Railroad Engineers. Pipe and Pumping Machinery.
CHARLOTTE, N. C.

ARE YOU INTERESTED ...IN... CEMENT ROSENDALE?

Send name and address for book.

COMMERCIAL WOOD AND CEMENT CO.
GIRARD BUILDING, PHILADELPHIA.

MILLER BROS. & CO. Builders of
Tradesmen's Bldg.,
PITTSBURGH, PA. Miller's Patent Soaking Pit, O. H., Tube Welding, Heating and Annealing Furnaces. Plants Built Complete. Best Work. Modern Designs and Guaranteed Results.

THE DUFF GAS PRODUCER HAS NO EQUAL.

T. L. FOSSICK COMPANY,
PRODUCERS AND WHOLESALE DEALERS IN
Darlington - OOLITIC - Limestone.
Quarries and Mills at ROCKWOOD, ALA.
Office at SHEFFIELD, ALA.
SUPERIOR BUILDING STONE.
LARGEST PLANT AND BEST FACILITIES IN THE SOUTH.

TECHNICAL EDUCATION 50 CENTS A WEEK

For \$3 down and \$2 a month, we give AN EDUCATION in:

STEAM ENGINEERING
Electrical, Mechanical & Civil Engineering
Refrigeration; Chemistry; Mining; Architectural,
or Mechanical Drawing; Surveying and Mapping;
Sanitary Plumbing; Architecture; Sheet Metal
Patterns; Drafting; Prospecting; Bookkeeping;
Shortland; English Branches.
All who study GUARANTEED SUCCESS.
We have helped thousands to better positions.
Circular Free. State subject you wish to Study.
International Correspondence Schools, Box 960, Scranton, Pa.

Engineers. Contractors. RITER-CONLEY COMPANY,

Iron and Steel Construction, Blast Furnaces,
Steel Plants, Iron Roofs and Frames, Rive end
Girders, Columns, etc., Heavy Plate Iron Work.
Designed, prepared and erected.

General Office: 55 & 56 Water St., Pittsburg, Pa.
New York Office: 39 & 41 Cortlandt St., New York, N. Y.

S. J. MACFARREN, M. E.
Electric, Traction
and Transmission Engineering.
Water-Power Development.
Introduction of Capital.
Financing Reports a Specialty.
Lock Box 864. PITTSBURGH, PA.

H. ALBER, C. E. P. BYRNE, M. E.
ALBER & BYRNE.
CIVIL, MINING, BRIDGE, MECHANICAL,
AND CONSULTING ENGINEERS.
Railroads and Bridges, Mines and Mining
Machinery, Furnaces and Coke Ovens, City
Sewerage and Water Works, Surveys and Reports
on Mineral Lands.
Office, 184 1/2 Second Avenue,
BIRMINGHAM, ALA.

TOWER & WALLACE,
ARCHITECTS AND ENGINEERS.
Ashley B. Tower, M. Am. Soc. C. E., Consulting Engineer.
1916 Townsend Bldg., Broadway & 15th St., New York.
Holyoke, Mass.
Surveys, plans, specifications and estimates for the design and equipment of paper, fibre and textile mill's power development and transmission. Evaluations and negotiations for manufacturing property.

B. BRENTNALL LATHBURY, Assoc. M. A. M. Soc. C. E.

HENRY S. SPACKMAN.

LATHBURY & SPACKMAN,
Specialties—Design and Construction of Cement Plants, Inspection of Materials, Chemical Analysis.
Tests up to 200,000 lbs. Office and Laboratories, 1619 Filbert St., PHILADELPHIA

CHAS. A. M. PRARAY & CO., MILL ARCHITECTS AND ENGINEERS,
Banigan Building, PROVIDENCE, R. I.
Plans and Specifications for the Construction and Equipment of Textile Mills.
Praray's Improved Construction for Mills, etc., a Specialty. Old Mills Reorganized and Extended.
SOUTHERN OFFICE, CHARLOTTE, N. C.

G. W. CHANCE & CO.
Engineers and Contractors
14 S. Broad St., PHILA., PA.
Southern Agt., M. A. Agelarto, E. E.
27 Plume St., NORFOLK, VA. Mills, Railways, Power Plants, Mines, Expert Reports.

BALTIMORE, MD. 35 Mfrs. Record Bldg.
HILL & HOWARD,
Consulting Engineers.

Water Works, Electric Subway, Transmission
of Power, Electric and Power Plants, Specifi-
cations, Reports, Tests, Inspections, Estimates, etc.
NICHOLAS S. HILL, Jr. M. E. B. C. HOWARD, E. E.

WM. A. CHAPMAN & CO. Mill Builders

Main Office:
PROVIDENCE, R. I.

C. H. NORTON,
Contractor and Builder,
Cotton Factories, Residences, Churches
Business Buildings.
All Classes of Heavy and Fancy Buildings.
Correspondence Solicited.
DURHAM, N. C.

V. P. GUILFOUX, Civil Engineer. FRANK BLANC, Contractor & Builder
GUILFOUX & BLANC,
General Contractors,
Canal, Iron Bridge, Waterworks and Railroad Building.
All kinds of Building Material for above lines
Bought and Sold on Commission.
NEW IBERIA, LOUISIANA.

CHAS. McFADDEN, Jr.,

Successor to

CHAS. McFADDEN & SONS,
Railroad
Contractors,
722 Arch Street, PHILADELPHIA, PA.

SOUTHEASTERN LIME & CEMENT CO.
CHARLESTON, S. C.

Direct Importers
ENGLISH and BELGIUM PORTLAND CEMENTS.
Southern Agents New York & Rosendale Cement
Co.'s Standard Hydraulic Cement.
Brooklyn Bridge and Hudson River Brands.

Maryland Cement Co.

Manufacturers of
Highest Grade
Portland Cement
Builders' Exchange Building,
BALTIMORE, MD.

William M. Bird & Co.
CHARLESTON, S. C.
Manufacturers' Agents for
PORTLAND and ROSENDALE
CEMENTS.

State Agents for
Howe Standard Scales,
Diebold Fire and Burglar Proof Safes.
Dealers in
MILL SUPPLIES OF ALL KINDS, OILS,
PAINTS, and PAINTIN MATERIAL.

J. ROSS HANAHAN,
ANALYTICAL AND CONSULTING CHEMIST,
CHARLESTON, S. C.
Analyses of all kinds. PHOSPHATES and FER-
TILIZERS a Specialty.

D. OTTO MEYER, Analytical and Consulting
Chemist, 1107 E. Cary St., Richmond, Va.
Analyses of natural and artificial products. In-
dustrial processes investigated and worked out.
Mineral properties examined.

N. P. PRATT LABORATORY,
Fitten Building, ATLANTA, GA.
Assays and analyses of all natural and artificial
products. Chemical and mining engineering.

LUCIUS P. BROWN,
Cumberland Publishing Bldg., Nashville, Tenn.
Analytical and Consulting Chemist and Assayer.
Assays and analyses of all classes of materials.
Examinations of mineral properties.

DR. HENRY FROEHLING,
Analytical and Consulting Chemist,
17 SOUTH 12th STREET,
RICHMOND, VA.

Analyses and assays of ores of every kind,
iron, steel and other metals, coal and coke, clays,
marls and limestones, phosphates and fertilizers,
mineral waters, waters for drinking and for
boiler use, oils, commercial products, etc.
Estimates promptly furnished. Geological and
chemical investigation of mineral properties of
the South.

CORBETT MILL SUPPLY CO.
Milling and Mechanical Engineers.
Contractors and Builders of Flour and Corn Meal Mills.
Mill Supplies. New and Second Hand Machinery
Bought and Sold. Special Prices on Roll Dressing.
Correspondence Solicited.
487 Missouri Ave., N. W. opp. Penn. R. R. Baggage
Room, Washington, D. C.

LOWELL TEXTILE SCHOOL

The Most Complete Textile School in America.
Thoroughly practical instruction given
In All Branches of Textile
Manufacturing.
New machinery. Send for catalogue.
C. P. BROOKS, Director,
Lowell, Mass.

L. B. BRICKENSTEIN,
SALEM, N. C.
Automatic Sprinkler Equipments.
STEAM AND HOT WATER HEATING.

MEDAL AND DIPLOMA AWARDED
WORLD'S COLUMBIAN EXPOSITION.
Grinnell
Automatic
Sprinklers

THOUSANDS OF FIRES IN ALL PARTS
OF THE WORLD
in which the damage has been confined to
limited area, and minimum amount, show
the value of this system.

Executive Offices—Providence, R. I.
GENERAL FIRE EXTINGUISHER
COMPANY.
Information and proposals given on appli-
cation.

Importers Portland Cement
and Terne Plates.
C. M. GILBERT & CO. SAVANNAH, GA.

CLASSIFIED INDEX OF ADVERTISERS.

FOR ALPHABETICAL INDEX See Page 320.

Pipe Cutting & Threading Mchs.
Columbus Machine Co., Columbus, O.
Henry B. Pancoast & Co., Philadelphia, Pa.
D. Saunders's Sons, Yonkers, N. Y.

Plaster Ornaments.
Samuel H. French & Co., Philadelphia, Pa.
Plating. (Nickel.)
Hanson & Van Winkle Co., Newark, N. J.

Plumbers' Supplies and Tools.
H. Mueller Mfg. Co., Decatur, Ill.
Haines, Jones & Cadbury Co., Phila., Pa.
James Robertson Mfg. Co., Baltimore, Md.
Henry B. Pancoast & Co., Philadelphia, Pa.

Plumbago.
Joseph Dixon Crucible Co., Jersey City, N. J.
Presses. (Baling, etc.)
Alabama Fdy. & Mch. Wks., New Decatur, Ala.

G. H. Bushnell Press Co., Thompson's Conn.
Cardwell Machine Co., Richmond, Va.
Boomer & Boschert Press Co., Syracuse, N. Y.
Valk & Murdoch Iron Wks., Charleston, S. C.
Presses. (Stamping.)

Niagara Machine & Tool Works, Buffalo, N. Y.
West Manufacturing Co., Buffalo, N. Y.
Toledo Machine & Tool Co., Toledo, O.
The E. S. Stiles Press Co., Watertown, N. Y.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.

Pulleys, Shafting and Hangers.
The Lane & Bodley Co., Cincinnati, O.
Christiana Machine Co., Christiana, Pa.
Fairmount Machine Co., Philadelphia, Pa.
Norris, Burnham & Co., Glen Rock, Pa.
The Jeffrey Mfg. Co., Columbus, O.
Lombard Iron Wks. & Sup. Co., Augusta, Ga.
Golden Fdy. & Mch. Co., Columbus, Ga.
Nordyke & Marmon Co., Indianapolis, Ind.
Lane Mfg. Co., Montpelier, Vt.
Wolf Co., Chambersburg, Pa.
Charlotte Machine Co., Charlotte, N. C.
E. M. Freese & Co., Gallon, O.
Walker & Elliott, Wilmington, Del.
H. W. Caldwell & Son Co., Chicago, Ill.

Pumps. (Gravity.)
A. A. Griffing Iron Co., New York, N. Y.

Pumps. (Power Boiler-Feed.)
A. S. Cameron St. Pump Wks., New York, N. Y.
John H. McGowan Co., Cincinnati, O.

Pumps. (Steam.)
Gardner Governor Co., Quincy, Ill.
Mulhead Machine Works, Pittston, Pa.
Hall Steam Pump Co., Pittsburg, Pa.
Albany Steam Trap Co., Albany, N. Y.
The E. W. Van Dusen Co., Cincinnati, O.
Mason Regulator Co., Boston, Mass.
Snow Steam Pump Works, Buffalo, N. Y.
Cameron & Barkley Co., Charleston, S. C.
Stillwell-Bierce & Smith-Valle Co., Dayton, O.
John H. McGowan & Co., Cincinnati, O.
Henry R. Worthington, New York, N. Y.
Pulmonometer St. Pump Co., New York, N. Y.
Dean Bros. St. Pump Wks., Indianapolis, Ind.
A. S. Cameron St. Pump Wks., New York, N. Y.

Pumping Machinery.
Hall Steam Pump Co., Pittsburg, Pa.
Snow Steam Pump Works, Buffalo, N. Y.
Pump Governor.
Vincent Brass Works, Cleveland, O.
Albany Steam Trap Co., Albany, N. Y.
Mason Regulator Co., Boston, Mass.
E. Keeler Co., Williamsport, Pa.

Punching and Shearing Machinery.
West Manufacturing Co., Buffalo, N. Y.
Toledo Machine & Tool Co., Toledo, O.
The E. S. Stiles Press Co., Watertown, N. Y.
E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.
Bertch & Co., Cambridge City, Ind.
J. M. Robinson & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.

Quarry and Stonecutting Mch.
Sullivan Machinery Co., Chicago, Ill.
Rand Drill Co., New York, N. Y.
Ingersoll-Sargeant Drill Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, O.

Radiators. (Steam and Water.)
A. A. Griffing Iron Co., New York, N. Y.

Railroad Equipment and Supplies.
(New and Second-Hand.)
Thos. P. Conard, Philadelphia, Pa.
Benjamin Iron & Steel Co., Buffalo, N. Y.
Ben. Watson, New York, N. Y.
The Steel Rail Supply Co., New York, N. Y.
Fitz-Hugh & Co., Chicago, Ill.
Hawkins Williams & Co., Birmingham, Ala.
Himes Mfg. Co., Corry, Pa.
New York Equipment Co., New York, N. Y.
Baillet & Co., Philadelphia, Pa.
Pittsburg Locomotive Wks., Pittsburg, Pa.
M. Mithskun & Co., Detroit, Mich.
Foulter & Co., Philadelphia, Pa.
Hickman & Williams, Louisville, Ky.
The Bailey-Lebby Co., Charleston, S. C.
Cameron & Barkley Co., Charleston, S. C.
L. K. Hirsch, Chicago, Ill.
Robinson & Orr, Pittsburg, Pa.
Weir Frog Co., Cincinnati, O.
H. K. Porter & Co., Pittsburg, Pa.
Baldwin Locomotive Wks., Philadelphia, Pa.

Rails. (Steel.)
The Steel Rail Supply Co., New York, N. Y.
Aetna Stand. Iron & Steel Co., Bridgeport, O.
Reamers.
The Tampograph Co., Wilmington, Del.
Morse Twist Drill & Mch. Co., New Bedford, Mass.

Refrigerating Plants. [See Ice-making Machinery.]
Regulators. (Water & Steam Pressure.)
Crosby St. Gate & Valve Co., Boston, Mass.
H. Mueller Mfg. Co., Decatur, Ill.

Mason Regulator Co., Boston, Mass.
Henry R. Worthington, New York, N. Y.

Regulators. (Damper.)
Mason Regulator Co., Boston, Mass.

Riveter. (For Cotton Tie Bands.)
Capital City Machine Works, Columbus, O.

Road Machinery.
Pope Revers. Street Roller Co., St. Louis, Mo.
Keystone Crusher & Roller Co., Pittsburg, Pa.
Russell & Co., Massillon, O.

The O. S. Kelly Co., Springfield, O.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Roofing. (Felt, Tar, Asphalt, Paper, etc.)
Merchant & Co., Philadelphia, Pa.

Garrett-Buchanan Co., Philadelphia, Pa.
National Roofing & Sup. Co., Louisville, Ky.
The Armistage Mfg. Co., Richmond, Va.
Standard Paint Co., New York, N. Y.
Warren Chem. & Mfg. Co., New York, N. Y.
Empire Paint & Roofing Co., Phila., Pa.
C. S. Garrett & Son, Philadelphia, Pa.

Roofing and Siding. (Metal.)
Merchant & Co., Philadelphia, Pa.
Gedge Bros. Iron Roofing Co., Anderson, Ind.
Cincinnati Corrugating Co., Piqua, O.
Philadelphia Steel Roofing Co., Phila., Pa.
Cortright Metal Roofing Co., Phila., Pa.

Roofing. (Metal Shingles.)
Cortright Metal Roofing Co., Phila., Pa.
Roofing. (Slate.)
John Galt & Sons, New York, N. Y.

Slatington-Bangor Slate Syndicate, Slatington, Pa.
Williams & Schmid, Granville, N. Y.
David McKenna, Slatington, Pa.

Roofers' and Tinners' Supplies.
Niagara Machine & Tool Works, Buffalo, N. Y.
J. M. Robinson & Co., Cincinnati, O.

Ropes. (Transmission.)
The American Mfg. Co., New York, N. Y.

Rubber Goods.
N. J. Car Spring & Rub. Co., Jersey City, N. J.
Boston Belting Co., Boston, Mass.
Eureka Fire Hose Co., New York, N. Y.

Sacks. (Fertilizer, etc.)
Royal Bag Mfg. Co., Charleston, S. C.

John T. Bailey & Co., Philadelphia, Pa.

Sandpaper. [See Paper.]
Safes.
Cincinnati Safe & Lock Co., Cincinnati, O.

Safety Water Columns.
A. A. Griffing Iron Co., New York, N. Y.

Saws. [See Woodworking Machinery.]
Hammacher, Schlemmer & Co., New York, N. Y.
Huther Bros., Cincinnati, N. Y.

Standard Saw Mill Machy. Co., Erie, Pa.
H. Dinaton & Sons, Philadelphia, Pa.

E. C. Atkins & Co., Indianapolis, Ind.
W. F. & John Barnes Co., Rockford, Ill.

Saw Mill Machinery.
The Lane & Bodley Co., Cincinnati, O.

High Point Mch. Works, High Point, N. C.
Chambersburg Eng. Co., Chambersburg, Pa.

Franklin F. Davis, Atlanta, Ga.
Standard Saw Mill Machy. Co., Erie, Pa.

H. L. Beach, Montrose, Pa.
Valdosta Fdy. & Mch. Co., Valdosta, Ga.

Cordeman Machine Co., Cincinnati, O.
The E. D. Albro Co., Cincinnati, O.

A. B. Farquhar Co., Ltd., York, Pa.
Hench & Dromgold, York, Pa.

Union Iron Works Co., Selma, Ala.
The Bailey-Lebby Co., Charleston, S. C.

Lane Mfg. Co., Montpelier, Vt.
J. A. Fay & Co., Cincinnati, O.

The Egan Co., Cincinnati, O.
Cameron & Barkley Co., Charleston, S. C.

Fricks Co., Waynesboro, Pa.
E. & B. Holmes Mch. Co., Buffalo, N. Y.

Scales. (Railroad, etc.)
Stand. Scale & Sup. Co., Ltd., Pittsburg, Pa.

Schools and Colleges.
Registrars, University of Tennessee, Knoxville, Tenn.

Lowell Textile School, Lowell, Mass.
International Corres. Schools, Scranton, Pa.

Screens. (Ore and Coke.)
The Jeffrey Mfg. Co., Columbus, O.

The Ludlow-Saylor Wire Co., St. Louis, Mo.
McLanahan & Stone, Hollidaysburg, Pa.

Hendrick Mfg. Co., Ltd., Carbondale, Pa.
Mundt & Sons, New York, N. Y.

J. A. Beckley & Co., Garwood, N. J.
Harrington & King Perf. Co., Chicago, Ill.

Screen Plates.
The Ludlow-Saylor Wire Co., St. Louis, Mo.

A. J. Beckley & Co., Garwood, N. J.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Harrington & King Perf. Co., Chicago, Ill.
Mundt & Sons, New York, N. Y.

Screws. (Machine and Wood.)
Franklin S. Miles, Philadelphia, Pa.

Philadelphia Mch. Screw Wks., Phila., Pa.
Screws. (Set, Cap and Special.)

Franklin S. Miles, Philadelphia, Pa.
Scroll Saws. [See Woodworking Mch.]

Cordeman Machine Co., Cincinnati, O.
H. L. Beach, Montrose, Pa.

W. F. & John Barnes Co., Rockford, Ill.
J. A. Fay & Co., Cincinnati, O.

The Egan Co., Cincinnati, O.
Separator. (Magnetic.)

The S. Howes Co., Silver Creek, N. Y.
Separator. (Steam and Grasso.)

A. A. Griffing Iron Co., New York, N. Y.
Sheet Metal Working Machinery.

West Manufacturing Co., Toledo, O.
Toledo Machine & Tool Co., Toledo, O.

The Jeffrey Mfg. Co., Columbus, O.
The E. S. Stiles Press Co., Watertown, N. Y.

E. W. Bliss Co., 137 Plymouth street, Brooklyn, N. Y.

Bertch & Co., Cambridge City, Ind.
Chas. H. Besly & Co., Chicago, Ill.

J. M. Robinson & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.

M. Zier & Co., New Albany, Ind.
Shingle, Lath and Stave Machinery.

[See Woodworking Machinery.]
Lane Mfg. Co., Montpelier, Vt.

E. & B. Holmes Mch. Co., Buffalo, N. Y.
Trevor Mfg. Co., Lockport, N. Y.

Ship Builders. (Iron and Steel.)
Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

Shoes and Dies.
Chrome Steel Works, Brooklyn, N. Y.

Skylights.
Merchant & Co., Philadelphia, Pa.

Pittsburg Plate Glass Co., Pittsburg, Pa.
Slate. (Roofing and Blackboard.)

John Galt & Sons, New York, N. Y.
Williams & Schmid, Granville, N. Y.

Slatington-Bangor Slate Syndicate, Slatington, Pa.
David McKenna, Slatington, Pa.

Sonpmakers' and Butchers' Mch.
H. Wm. Dopp & Son, Buffalo, N. Y.

Solder.
Theo. Heitz & Son, St. Louis, Mo.

Spark Arresters.
The South Bend Spark Arrester Co., South Bend, Ind.

Speaking Tubes.
Chas. H. Besly & Co., Chicago, Ill.

Spelter.
Theo. Heitz & Son, St. Louis, Mo.

Springs. (Bicycle Saddle.)
Morgan Spring Co., Worcester, Mass.

Springs. (Spiral.)
The Ludlow-Saylor Wire Co., St. Louis, Mo.

Morgan Spring Co., Worcester, Mass.
The Cleveland Wire Spring Co., Cleveland, O.

Hansell Spring Co., Newark, N. J.
Chas. H. Besly & Co., Chicago, Ill.

N. J. Car Spring & Rub. Co., Jersey City, N. J.
Springs. (Railway and Machinery.)

Morgan Spring Co., Worcester, Mass.
The Cleveland Wire Spring Co., Cleveland, O.

Hansell Spring Co., Newark, N. J.
Sprinklers. (Automatic.) [See Fire Ex-

Stair Treads. (Steel.) [See Fire Ex-

Standpipes.
A. J. Beckley & Co., Garwood, N. J.

The Means & Fulton Iron Works, Birmingham, Ala.

Ritter-Conley Co., Pittsburg, Pa.
York Mfg. Co., York, Pa.

Broomell, Schmidt & Co., Ltd., York, Pa.
M. Zier & Co., New Albany, Ind.

Alabama Bridge & Bolt Co., Birmingham, Ala.
Hartley's Boiler Works, Montgomery, Ala.

Lombard Iron Wks. & Sup. Co., Augusta, Ga.
Birmingham Boiler Wks., Birmingham, Ala.

Steam Engine Indicators.
Thompson & Bushnell, New York, N. Y.

Crosby St. Gate & Valve Co., Boston, Mass.
Steam Gages.

Crosby St. Gate & Valve Co., Boston, Mass.
Steam Heating.

A. A. Griffing Iron Co., New York, N. Y.
L. B. Brickenstein, Salem, N. C.

The Peck-Hammond Co., Cincinnati, O.
T. H. Brooks & Co., Cleveland, O.

Broomell, Schmidt & Co., Ltd., York, Pa.
Warren Webster & Co., Camden, N. J.

Steam Shovels. [See Dredges and Ex-

Steam Traps.
A. A. Griffing Iron Co., New York, N. Y.

B. F. Sturtevant Co., Boston, Mass.
Albany Steam Trap Co., Albany, N. Y.

William S. Haines Co., Philadelphia, Pa.
Mason Regulator Co., Boston, Mass.

Steam Supplies.
A. A. Griffing Iron Co., New York, N. Y.

Geo. F. Glarkin & Co., Atlanta, Ga.
Wallace Stebbins, Baltimore, Md.

Steamship Lines.
Detroit & Cleveland Nav. Co., Detroit, Mich.

Buffalo & Cleveland Transit Co., Cleveland, O.
Richmond & York River Line, Balto., Md.

Merchants & Miners' Trans. Co., Balto., Md.
Bay Line Steamers, Baltimore, Md.

Baltimore Storage & Light Co., Balto., Md.
Steel. (Manufacturers of)

Janney & Steinmetz, Philadelphia, Pa.
Aetna Stand. Iron & Steel Co., Bridgeport, O.

Apollo Iron & Steel Co., Pittsburg, Pa.
Chester Steel Castings Co., Phila., Pa.

Chrome Steel Works, Brooklyn, N. Y.
Steel. (Safe and Vault.)

Chrome Steel Works, Brooklyn, N. Y.
Stokers. (Mechanical.)

American Stoker Co., New York, N. Y.
Westinghouse Machine Co., Pittsburg, Pa.

The Playford Stoker Co., Cleveland, O.
Wilkinson Mfg. Co., Philadelphia, Pa.

Stoppers and Nozzles. (For Furnaces.)
R. B. Seidel, Philadelphia, Pa.

Stoves.
Broomell, Schmidt & Co., Ltd., York, Pa.

Stoves. (Gasoline.)
Schneider & Trenkamp Co., Cleveland, O.

Studs.
Franklin S. Miles, Philadelphia, Pa.

Switch Boards, Switches, etc.
Crouse-Hinds Electric Co., Syracuse, N. Y.

Stanley Electric Mfg. Co., Pittsburg, Mass.
Westinghouse Elec. & Mfg. Co., Pittsburg, Pa.

Tanks. (Iron and Steel.)
Aerostatic Power Co., Baltimore, Md.

Janney & Steinmetz, Philadelphia, Pa.
The Kiechler Mfg. Co., Cincinnati, O.

The Means & Fulton Iron Works, Birmingham, Ala.
Ritter-Conley Co., Pittsburg, Pa.

York Mfg. Co., York, Pa.
Broomell, Schmidt & Co., Ltd., York, Pa.

Alabama Bridge & Bolt Co., Birmingham, Ala.
Hartley's Boiler Works, Montgomery, Ala.

Lombard Iron Wks. & Sup. Co., Augusta, Ga.
Pittsburg Locomotive Wks., Pittsburg, Pa.

Birmingham Boiler Wks., Birmingham, Ala.
Tudor Boiler Mfg. Co., Cincinnati, O.

Valk & Murdoch Iron Wks., Charleston, S. C.
Tanks. (Wood.)

G. M. Davis & Son, Palatka, Fla.
H. F. Lewis & Co., Ltd., New Orleans, La.

Tarred Goods.
C. S. Garrett & Son, Philadelphia, Pa.

Telephones.
The Rawson Electric Co., Elvira, O.

Terne Plate.
Aetna Stand. Iron & Steel Co., Bridgeport, O.

C. M. Gilbert & Co., Savannah, Ga.
Terra Cotta.

Pomona Terra Cotta Co., Pomona, N. C.
V. H. Kriegshafer, Atlanta, Ga.

Textile Machinery. [See Cotton Mill Machinery.]

Fairmount Machine Co., Philadelphia, Pa.
J. A. Gowdey & Son, Providence, R. I.

Crompton & Knowles Loom Works, Worcester, Mass.
Curtis & Marble Mch. Co., Worcester, Mass.

Branson Machine Co., Philadelphia, Pa.
Lowell Machine Shop, Lowell, Mass.

American Supply Co., Providence, R. I.
Draper Co., Hopedale, Mass.

Whitinsville Spn. Ring Co., Whitinsville, Mass.
Mason Machine Works, Taunton, Mass.

Charlotte Machine Co., Charlotte, N. C.
Kilburn, Lincoln & Co., Fall River, Mass.

Providence Machine Co., Providence, R. I.
Easton & Burnham Mch. Co., Pawtucket, R. I.

Triplate.
Aetna Stand. Iron & Steel Co., Bridgeport, O.

Tobacco Machinery.
Cardwell Machine Co., Richmond, Va.

Rucke Iron and Brass Works, Dayton, O.
Tools. (Machinists' and Mechanics')

Brown & Sharpe Mfg. Co., Providence, R. I.
The Tampograph Co., Wilmington, Del.

Morse Twist Drill & Mch. Co., New Bedford, Mass.
Tools. (Tinners.)

Niagara Machine & Tool Wks., Buffalo, N. Y.
Torch. (Contractors.)

Wells Light Mfg. Co., New York, N. Y.
Towns.

Radford Board of Trade, Radford, Va.
Charleston, S. C.

Tramway. (Overhead.)
Cohoes Iron Fdy. & Mch. Co., Cohoes, N. Y.

Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Trust Companies. [See Bankers and

Tube Expanders.
Joseph F. McCoy Co., New York, N. Y.

Tubing.
The Ludlow-Saylor Wire Co., St. Louis, Mo.

Chas. H. Besly & Co., Chicago, Ill.
Turbines. [See Water Wheels.]

Valve. (Slide.)
The American Balance Slide Valve Co., Jersey Shore, Pa.

A. A. Griffing Iron Co., New York, N. Y.
Frontier Iron Works, Detroit, Mich.

Viaduct Brass Works, Cleveland, O.
John Featherstone's Sons, Chicago, Ill.

The Fred W. Wolf Co., Chicago, Ill.
Boston Belting Co., Boston, Mass.

The Kelly & Jones Co., Greensburg, Pa.
Crosby St. Gate & Valve Co., Boston, Mass.

The Lukenheimer Co., Cincinnati, O.
Mason Regulator Co., Boston, Mass.

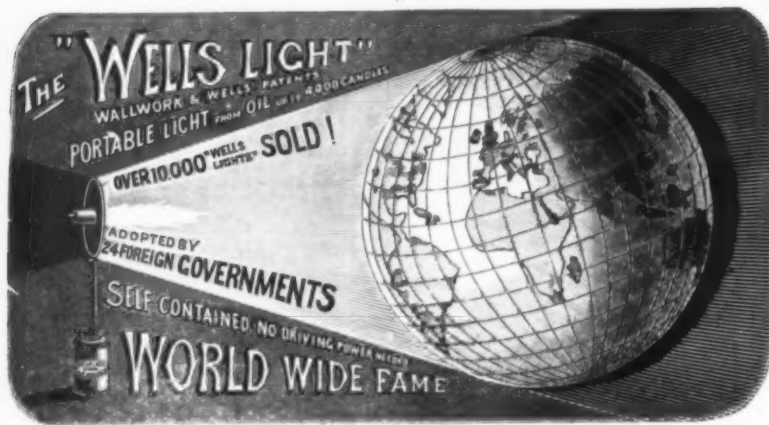
Chapman Valve Mfg. Co., Indian Orchard, Mass.
N. J. Car Spring & Rub. Co., Jersey City, N. J.

R. D. Wood & Co., Philadelphia, Pa.
Jenkins Bros., New York, N. Y.

Ludlow Valve Mfg. Co., Troy, N. Y.
Broomell, Schmidt & Co., Ltd., York, Pa.

Veneer Machines.
The E. D. Albro Co., Cincinnati, O.

Wagon Builders' Mch. &



SEND FOR CATALOGUE.

The Wells Light Mfg. Co.

No. 44 Washington St., New York City.

Gentlemen:—It is contrary to our rule to give testimonials, but an article with the merit of your Wells Light deserves to be made an exception. We have used your lights for the past five years, and consider them indispensable to us.

Yours very truly,

Ross-Meehan Foundry Co.

P. A. Brawner, Sec. & Treas.

UNAFFECTED BY WEATHER.

Especially adapted for Contractors, Quarries, Shovels, Railroad Construction, Dredges, Bridge and Dock Builders, Water Works, Brick Yards and Coal Docks.

500 Contractors and 450 Railroads now use the WELLS LIGHT.

THE WELLS LIGHT MFG. CO.

EDWARD ROBINSON, Sole Proprietor.

Cor. Washington and Morris Streets, NEW YORK.



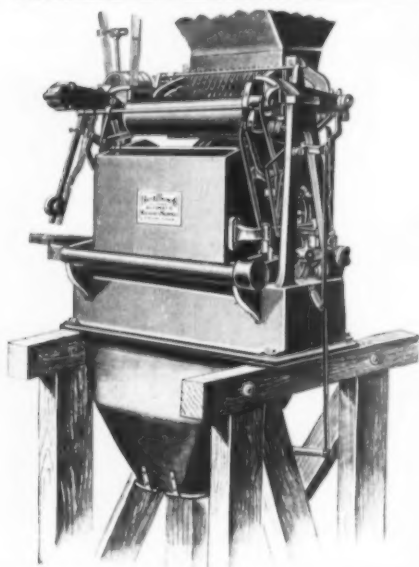
PIN your faith to a line which has always proven a winner. It will have many valuable improvements for the season of 1898. Send for our latest catalogue. It is now ready. It will tell you all about it.

THE SCHNEIDER & TRENKAMP CO.

Chicago, Illinois.

MENTION THIS PAPER.

Cleveland, Ohio.

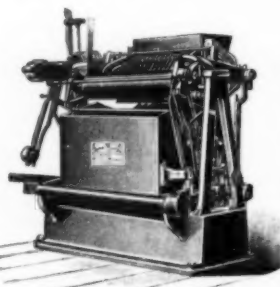


Indispensable for ... Cotton-Seed Oil Mills.

The Pratt & Whitney Co.'s
Automatic Weighing Machines
for Cotton-Seed
and Cotton-Seed Meal.

Write for Circular C.

The Pratt & Whitney Co., Hartford, Conn.

**MACHINE SHOPS.****FOUNDRY.****COPPER SHOPS.**

Full Line of Mill Supplies.
WILMINGTON IRON WORKS,
Wilmington, N. C.

THE BRADSTREET Mercantile Agency

WAS ESTABLISHED IN 1849.

Is the oldest and financially the strongest organization of its kind, working in one interest and under one management, with more capital invested in the business, and expends more money every year for the collection and dissemination of its information than any similar institution in the world. Its reports are considered in the light of a guide by both investors and those contemplating the granting of credit. In addition to a large corps of skilled employees, more than one hundred thousand correspondents contribute the result of their investigation and opinions. Subscriptions are annual, and may commence at any time the subscriber elects. Details as to prices and terms will be furnished upon application.

CHARLES F. CLARK, President.
Baltimore Offices, Equitable Building.
H. KERSHAW, Supt.



Sturtevant Steam Traps.

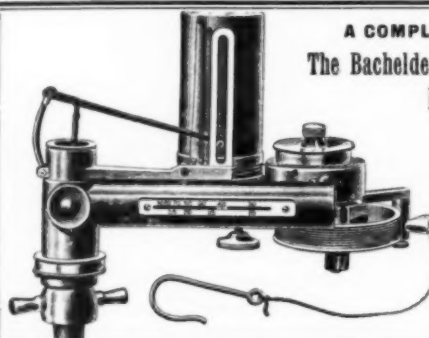
TRY THEM—
You will like them.
Send for prices.

B. F. STURTEVANT CO.
Boston, Mass.

SIMPLEST AND BEST! The "Correct" Steam Flue Cleaner



Perfectly Automatic and Safe. Steam Passes through Head only. Full Force of Steam Pressure Utilized at the end of Flue. Will clean 18-foot flues perfectly. Economy in Steam. Send for Catalogue with full description.
VIADUCT BRASS WORKS, 32 Centre Street, CLEVELAND, O.

**A COMPLETE OUTFIT FOR INDICATING.**

The Bachelier Adjustable Spring Indicator and
Ideal Reducing Wheel.

No change of spring. Direct connection from indicator to Cross-Head. Complete, Compact and Reliable. Always ready for use at any speed or pressure. This instrument received the Highest Award at the World's Columbian Exposition, Chicago, for Convenience, Mechanical Construction and Accuracy under all pressures.

Steam Specialties and Supplies.
Write for Descriptive Catalogue.

THOMPSON & BUSHNELL,
120 & 122 Liberty St., NEW YORK.

NEWPORT NEWS Shipbuilding and Dry Dock Co.

WORKS AT NEWPORT NEWS, VA.
(ON HAMPTON ROADS)

Equipped with a Simpson Basin Dry Dock, capable of docking a vessel 600 feet long, drawing twenty-five feet of water, at any stage of the tide.

Repairs made promptly and at reasonable rates.

SHIP AND ENGINE BUILDERS

For estimates and further particulars address

C. B. ORCUTT, President,

No. 1 BROADWAY,

NEW YORK.

Paddle Wheel Machinery

Our knowledge of river navigation is earned through long experience and exceptional opportunity. We design and build the entire and complete outfits of driving machinery for powerful light draft vessels, having the best of modern shop facilities to aid us in doing all the work. Write to us before you act.

MARINE IRON WORKS
Station A. CHICAGO.

TO INTRODUCE
our well known models early, we will for the next 30 days ship a sample wheel, C. O. D. to any address, upon receipt of \$1.00. We offer splendid chance to a good agent in each town. You have choice of Cash, the FREE USE of a sample wheel, or Outright Gift of one or more wheels, according to nature of work done for us.

INTRODUCTION PRICES.
NIBERIAN 11-4 in. tubing, Bush joints, 2 pr. cranks 18 in. long, \$ 39.
CONRAD 11-4 in. tubing, 2 pr. cranks, 18 in. long, \$ 24.
BLONDIKE 11-4 in. tubing, 2 pr. cranks, 18 in. long, \$ 19.
Any color, style, gear, height frame wanted.
'97 and '98 Models, various makes and styles \$12 to \$18
Wheels slightly used, modern types, \$8 to \$12
ART CATALOGUE FREE. SECURE AGENCY AT ONCE.

Y. A. MEAD CYCLE CO.
CHICAGO, ILL.

STERLING EMERY WHEEL MFG. CO.
TIFFIN, OHIO.
Correspondence solicited.



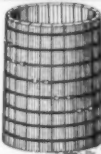
Write for Prospectus of our valuable book
SECRETS OF CANNING.
Tells all about
CANNING.
JOHN MURPHY & CO.
BALTIMORE, MD.

CANNING MACHINERY.

ESPECIALLY ADAPTED FOR THE SOUTH.
Full instructions furnished for putting up and operating your own plant, including processing of all the various canned goods. Prices from \$100 upwards; also Cans, Labels, Cases and Solder.
A. K. ROBINS & CO.
724 E. Pratt Street, BALTIMORE, MD.

FOR INFORMATION ABOUT U. S. MAIL CHUTES

WHICH ARE
A NECESSITY IN OFFICE BUILDINGS AND HOTELS.
Write to the sole makers,
THE CUTLER MFG. CO., Rochester, N.Y.
PATENTED. AUTHORIZED.



TANKS

We manufacture all kinds and sizes of CYPRESS TANKS.
Write for Catalogue.
G. M. DAVIS & SON, Palatka, Fla.



THE BURR PATENT STEEL SAFETY LIFT BLOCK

A Perfect Self-Locking Rope Tackle Block.
Runs as freely as an ordinary rope tackle block.
Holds more securely than a chain block.
Locks instantly and does not cut the rope.
Allows the load to be lowered safely and slowly, the operator using only one hand.
Cannot stick nor jam when the load is to be lowered.
"I have tested the Burr Self-Locking Steel Tackle Block and find it the most practical, quick and reliable Safety-lift I know of."
J. C. DEBES,
Supt. of the C. & G. Cooper Co.,
Mt. Vernon, O.
Adopted by the Penna. R. R. Co.
Send for circulars and prices.
The BURR MANUFACTURING CO.
823 Society for Savings Bldg.,
Cleveland, Ohio, U.S.A.

Alabama Bridge & Boiler Co.

ESTIMATES FURNISHED ON
Bridges and Structural Works, Tanks, Stand Pipes, Blast Furnaces, and all kinds of Sheet Iron Work.
Avenue A and 22d St. BIRMINGHAM, ALA.

Birmingham Boiler Works

Builders of Stand Pipes, Tanks, Stacks, Ore, Coal and Coke, Buggies, Laries, Lumber Trucks, Tram Cars. A large stock of new and second-hand Boilers, cheap.
WM. CRELLIN, Proprietor,
Ave. A, Powell av., and 24th st., Birmingham, Ala.

ENGINES AND BOILERS.

Tanks, Stacks, Stand Pipes and Sheet-Iron Work; Shafting, Pulleys, Gearing, Boxes, Hangers, etc. Mill Castings.
Cast every day; work 180 hands.
LOMBARD IRON WORKS & SUPPLY CO.
AUGUSTA, GEORGIA.

BALL AUTOMATIC CUT OFF ENGINE
MADE ONLY BY
THE BALL ENGINE CO
ERIE PA.

THE ABC STEAM TRAPS



Class B. Non-Return Trap has No Stuffing Boxes to stick or leak.
We manufacture Steam Traps for all duties, High and Low Pressures, returning the Condensation back into Boiler or discharging to Hot Well, Tank or Atmosphere.
Send for Catalogues A, B and C.
ALBANY STEAM TRAP CO., Albany, N. Y.

VALVES

Of all kinds for automatically controlling Steam, Water and Air Pressures.
SEND US YOUR PROBLEMS.
Mason Regulator Co., Boston, Mass.

MUELLER Water Regulator

has been used since 1882 and has given the best of satisfaction.
SEND FOR BOOKLET.
"There's Money In It."
Tells all about it.
H. MUELLER MFG. CO.
DECATUR, ILL.

TANGYE'S Hydraulic Lifting Jacks, Rail Benders, and Punches,

ALSO
Screw Jim Crows, Tube Expanders, Ratchet Drills and Hoists.
Large Assortment.
Catalogue gratis.
JOSEPH F. MCCOY COMPANY
26 Warren St., New York.

Absolutely Pure.

No Lead used in this metal.

Listen to its ring.



HOO-HOO
BABBITT METAL.
ST. LOUIS, MO.

For sale at makers' price by the following well known firms:

- H. A. Rogers New York City
- The Fairbanks Co. New Orleans
- Saml. Harris & Co. Chicago
- E. C. Atkins & Co. Memphis
- Beals & Co. Buffalo
- Strong, Carlisle & Turney Cleveland
- Palmer Hardware Co. Savannah
- Somers, Fittler & Clarke, Ltd. Pittsburgh
- Morley Bros. East Saginaw, Mich.
- Crane, Churchill & Co. Omaha, Neb.
- Lombard Iron Works & Supply Co.,
Augusta, Ga.
- A. M. Avery Pensacola, Fla.
- Chas. M. Whitlock Wilmington, N. C.
- Cotton States Belting & Supply Co.,
Atlanta, Ga.
- Robt. E. Brieseneck Brunswick, Ga.
- E. Corey & Co. Portland, Me.
- Congdon, Carpenter & Co., Providence, R. I.
- Hinckley & Egery Iron Co. Bangor, Me.
- A. W. Chesterton & Co. Boston
- Bailey-Lebby Co. Charleston, S. C.
- J. S. Schofield's Sons & Co. Macon, Ga.
- Odell Hardware Co. Greensboro, N. C.
- Coffin & Leeper City of Mexico
- Thos. C. Basshor & Co. Baltimore
- Queen City Supply Co. Cincinnati, O.



The Rider Packer

Iron Front, Friction Clutch

Is specially adapted for packing cement, alkali, plaster, paints, foundry facings and other powdered and granulated material. This is the latest and strongest packer on the market. The only packer having ball-bearings, making it the smoothest and lightest running packer on the market.

The Eureka Automatic Magnetic Separator.

This machine is specially constructed for separating iron, nails and metallic particles from phosphates and other powdered materials.
For particulars and prices of these machines, write

The S. Howes Company,
EUREKA WORKS,
Silver Creek, N. Y., U. S. A.

Established 1856.

THE WEIR FROG CO.
SOLE MANUFACTURERS OF
FRED G. WEIR'S
IMPROVED RIGID & SPRING FROGS CROSSINGS
SINGLE & THREE THROW SPLIT SWITCHES
FIXED & AUTOMATIC SWITCH STANDS STEEL
DIE FORMED RAIL BRACES, SWITCH FIXTURES, ETC.

CABLE & ELECTRIC
TRACK WORK
FROGS SWITCHES
CROSSINGS CURVES
RAIL CHAIRS
ETC.

CINCINNATI, O.
FRED G. WEIR

J. E. RHOADS & SONS, Sole Manufacturers of the TANNATE LEATHER BELT

Great Strength. Very Pliable. Lives Long at Hard Work. We Make High Grade Oak Belt too.
239 MARKET STREET, PHILADELPHIA, PA. WILMINGTON, DEL.



OLDEST, LARGEST
AND BEST
MANUFACTURERS
OF



BOSTON

RUBBER BELTING, HOSE and PACKING,

BELTING

EVERY DESCRIPTION OF

MECHANICAL RUBBER GOODS
OF SUPERIOR QUALITY.

COMPANY

JAMES BENNETT FORSYTH, Mfg. Agent and Gen. Mgr.



256-258-260 Devonshire St., Boston.
100 and 102 Reade St., New York.

SELLING AGENTS.

T. K. Carey & Bros. Co., Baltimore.
Chicago Belting Co., New Orleans.
Towner & Co., Memphis.

Graton & Knight Mfg. Co., 36 and 38 W.
Alabama St., Atlanta, Ga.



EUREKA FIRE HOSE CO.

13 BARCLAY STREET, NEW YORK CITY.
ORIGINAL MANUFACTURERS

"Eureka"
THREE PLY.

"Paragon"
TWO PLY.



"Red Cross"
ONE PLY.

Cotton Hose
ALL SIZES.
RUBBER LINED.

"U. S." BRAND RUBBER LINED COTTON FIRE HOSE.

Adopted as the Standard Factory Fire Hose by the Associated Factory Mutual Fire Insurance Companies, for Factory and Mill Fire Protection.

LINEN HOSE (LINED AND UNLINED) ALL SIZES.

EUREKA BELTING, &c.

THOS. K. CAREY & BROS. CO., AGENTS,
26 Light Street, - BALTIMORE, MD.

Chain Elevators, Conveyors.

JEFFREY

Roller, Steel and Special Chains

ELEVATING AND CONVEYING MACHINERY

FOR HANDLING MATERIAL OF ALL KINDS

POWER TRANSMISSION MACHINERY.

COAL MINING MACHINERY.

Wire Cable
Conveyors,
for the rapid
and safe
conveying.

163 Washington St.
NEW YORK.
Send for Catalogue.

THE JEFFREY MFG. CO.
Columbus, Ohio.

Globe Composition
WIRE BELT - LACE.

WRITE FOR PRICES,
J. M. HAYDEN & CO.
No. 68 Pearl Street,
GRAND RAPIDS, MICH.

LEVIATHAN

Belting

Is the Strongest,
Runs the Most
Evenly and Best
adapted for Cot-
ton, Woolen, Saw
and Planing Mills,
Brick and Tile
Works and
HEAVY DRIVING
GENERALLY.

MAIN
BELTING
CO.

1219-1235 Carpenter
Street,
PHILADELPHIA.
120 Pearl St.
BOSTON.
55 & 57 Market St.
CHICAGO.

Wet Tool Grinder.



Runs an Emery or
Corundum Wheel, 14
inch. in diameter and
2 inches thick.
Has no Pumps to get
out of order.

Manufactured by
C. N. CADY,
CANASTOTA, N. Y.

SPRINGS

MORGAN SPRING CO., Worcester, Mass.
Spring Makers. Solicit our prices.

ALEXANDER BROS.
BEST OAK BELTING.
PHILADELPHIA.

CONVEYORS ELEVATORS

THE LINK-BELT CARRIER

—HAS—

Buckets Rigidly Attached to Chains.
Self-Oiling Wheels.
Automatic Feed.
Self-Moving Discharger.
Equalizing Gear Drive.

SEND FOR . . .
DESCRIPTIVE CATALOGUE.

EWART LINK BELTING.

SPROCKET WHEELS.

LINK-BELT ENGINEERING CO.

NICETOWN, PHILA.

49 Day Street, NEW YORK.

THE CLEVELAND WIRE SPRING CO., Cleveland, Ohio.

Oil Tempered
Steel Springs
for all purposes
a specialty.

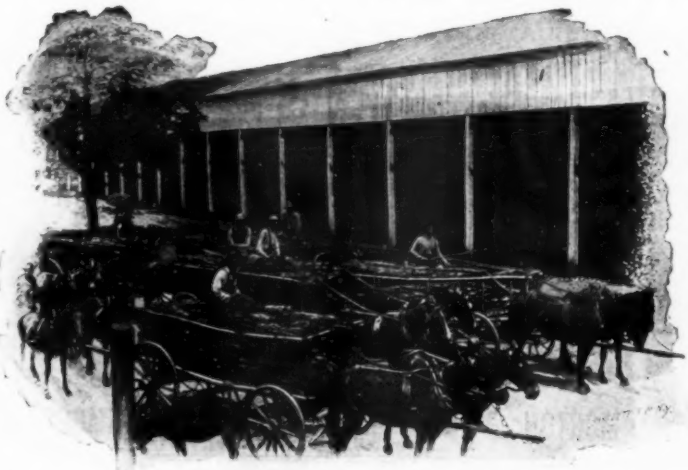


Upholstery,
Lounge,
Bed and Chair
Springs, etc.

PAT. STEEL WIRE PIPE BENDERS.

PAT. STEEL WALL TIES.

Chas. A. Schieren & Co. Jewell Belting Co.



Hauling Oak Bark at our Tanneries in Bristol, Tenn.

MANUFACTURERS AND TANNERS OF

Oak Tanned Leather Belting.
Giant and Raw Hide Lace Leather.
Cut Lacing Giant and Raw Hide.
Oak Valve Leather.
Oak Pump Leather.
Oak Hydraulic Leather.
Schieren's Belt Dressing.
Schieren's Belt Cement.

NEW YORK—47 Ferry Street. BOSTON—119 High Street.
CHICAGO—46 & 48 S. Canal St. PHILADELPHIA—226 N. 3d Street.

The BRADFORD BELTING CO.

203 Walnut Street, CINCINNATI, OHIO.

SOLE MANUFACTURERS OF



"Monarch" and "Bradford
Dynamo" Rivetless . .
Leather Belting.

ALSO DEALERS IN

Rubber Hose, Rubber Belting, Packing,
Electrical Supplies and Wood
Split Pulleys.

"OUR NAME AND BRAND A GUARANTEE OF QUALITY."

HIGH-GRADE RUBBER GOODS.



Belting, Packing, Tubing, Springs, Valves,
Gaskets, Mats and Matting,
Rubber-Lined Linen and Cotton Hose.

SEND FOR SAMPLES, ETC.

N. J. CAR SPRING & RUBBER CO., Jersey City, N. J.



BELT HOOKS

SAWYER HARDWARE & SUPPLY CO.,

PAWTUCKET, R. I.



In 1855 we made a Ten-Inch
Double Belt for Wm. Boardman
& Sons, Hartford, Conn., which
was in constant use until 1892. IT WAS USED
CONSTANTLY FOR THIRTY-SEVEN YEARS, during
which time it had run more than One Million
Two Hundred and Fifty Thousand Miles.

Address Main Office, Hartford, Conn.

Tanneries:

Jellico, Tenn. and Rome, Ga.

BRANCHES—175-177 Lake St., CHICAGO.

240 250 W. Somerset St., PHILADELPHIA.



The "Original Candy"

Sowed Cotton Duck Belting.

Especially adapted for Main Drivers, Saw
Mills, Cotton Gins, Cotton Presses, and for
all places where belts are subjected to mois-
ture or atmospheric changes, the "CANDY"
stands paramount.

For further information, prices, etc., write

The Candy Belting Co.
BALTIMORE, MD.

SOUTHERN DIRECT AGENTS—Whitney & Hoo Co., New Orleans, La.; Graton & Knight Mfg. Co., Atlanta Ga.; Bewler &
Shinn, Nashville, Tenn.; Smith-Courtney Co., Richmond, Va.; W. E. Caldwell Co., Louisville, Ky.
L. M. Ramsey Mfg. Co., St. Louis, Mo.

COCHECO LEATHER BELTING.

Established
Since
1842.

We Make Other Grades Also.

ALL OAK
BARK TANNED.

There's Our

SUPERIOR Lighter, but
even Better
than Cochecho in many places.

DYNAMO For Electrical
Work.

LIGHT DOUBLE Special Belt Made to Order.

WATERPROOF A BELT that really Sheds Water.

Contracts

FOR . .
Belting and Strapping for manufacturers.
Belting and Strapping for mills.
Belting Electrical Plants.
Face Leather in Large Quantities.

I. B. WILLIAMS & SONS

MAIN OFFICE AND FACTORY:

DOVER, N. H.

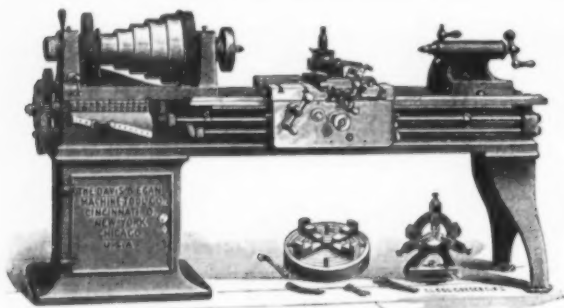
CLEVELAND BRANCH:
102 Superior St.

CHICAGO BRANCH:
205 Lake St.

CHICAGO BELTING CO.

Manufacturers of RELIANCE LEATHER BELTING.

Main Office & Factory,
67 and 69 S. Canal Street, Chicago.
316-318 St. Charles St., New Orleans.
Cor. Main & Jefferson Sts., Memphis.
221 Olive St., St. Louis, Mo.



14, 16 and 18 in. Challenge Lathes.

NEW YORK: 107 Liberty Street.

CHICAGO: 68 S. Canal Street.

BOSTON: 36 Federal Street.

PHILADELPHIA: 19 N. Seventh Street.

The American Tool Works Co.

Successors to THE DAVIS & EGAN MACHINE TOOL CO.

STANDARD MACHINE SHOP EQUIPMENTS.

Lathes, Planers, Shapers, Boring Mills, Milling Machines, Screw Machines, Monitor and Turret Lathes, Upright and Radial Drills, Bolt Cutters, Pulley Lathes, Shaping Lathes, Punches and Shears, Etc.

CINCINNATI, OHIO, U. S. A.

ENGINE LATHES.

FIFIELD TOOL CO.
LOWELL, MASS., U. S. A.

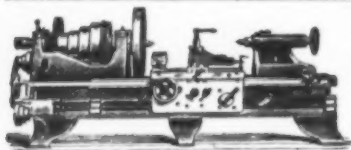


ENGINE LATHES 17" to 72" SWING.

Photo-cuts, description and prices on application.

Two acres devoted entirely to manufacturing Engine Lathes.

MORTON, REED & CO., Agents, - BALTIMORE, MD.

HAND...TURRET
SCREW-CUTTING

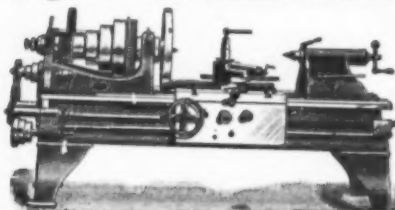
LATHES AND PLANERS

ARE MANUFACTURED BY

DRAPER MACHINE TOOL CO., WORCESTER, MASS., U. S. A.

WRITE US FOR PRICES AND CUTS.

High-Class ENGINE LATHES.

PATENTED
With NEW and VALUABLE FEATURES.
Made only by
THE BRADFORD MILL CO.
CINCINNATI, OHIO, U. S. A.Charles Churchill & Co., Ltd., London and
Birmingham; Schuchardt & Schutte, Berlin,
Brussels, Vienna, Stockholm; Adphe. Janssens
Paris, France; The E. A. Kinsey Co., Cincin-
nati, O.; J. A. Fay & Egan Co., Chicago, Ill.;
J. W. Wright & Co., St. Louis, Mo.; Pacific
Tool & Supply Co., San Francisco, Cal.; Phila-
delphia Bourse, Philadelphia, Pa.

LATHES THE WRIGHT CO.

LOWELL, MASS.

16 in. to 36 in. Swing.

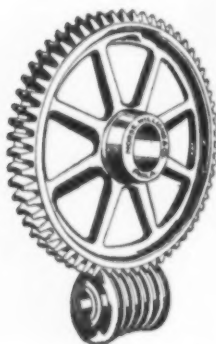
FACE TO FACE
WITH A
COLD
FACTFace to Face with Cold Facts.
WHOEVER
Makes a specialty of anything has the advantage in that
line. Nobody denies this.
WE ARE SPECIALISTS in Dies, Reamers, Tempered
Tools, Cutters, Small Brass Goods and Special Machinery.
Can save you money and please you, too. Proof is easy.
An inquiry costs nothing. Try us.
The Tampograph Co., Box C., Wilmington, Del.

TOOLS AND SUPPLIES

TOOLS FOR ALL TRADES.
BOLTS AND SCREWS.
BELTING.EMERY WHEELS.
GLUE HEATERS.
VENEER PRESSES.
CIRCULAR SAWS, &c.

HAMMACHER, SCHLEMMER & CO.

209 Bowery, - NEW YORK.



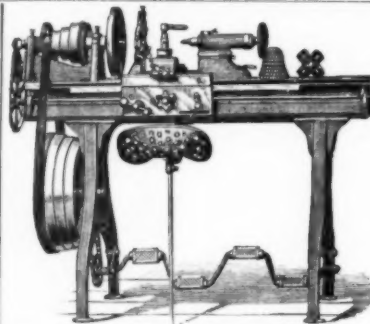
HINDLEY WORM GEARING

Manufactured by

MORSE, WILLIAMS & CO.

PHILADELPHIA, PA., U. S. A.

SEND FOR CATALOGUE AND PRICES.



LATHES

FOR THE
Electrician,
Experimenter,
General Machine
Shop Work.Our lathes are furnished for steam or foot-power.
Screw Cutting Lathes from 9" to 13" swing; ele-
gant in design; superior in workmanship.W. F. & JOHN BARNES CO.
221 Ruby Street, ROCKFORD, ILL.
THOS. K. CAREY & BROS. CO., Agents,
BALTIMORE, MD.COMPLETE
LINE
UPRIGHT
DRILLS.From a
Light
Friction
Disk
DRILL
to a
42-inch
Back
Geared
Sliding
Head
DRILL.SEND
FOR
CATAL-
OGUE.

HYDRAULIC RIVETERS,

FIXED AND PORTABLE.

Special Designs for Special Work, such as Truck Frames,
Bolsters, etc. Flanging and Forging Presses.
Cranes and Accumulators.

STEAM HAMMERS and DROP HAMMERS,

LATEST AND MOST IMPROVED DESIGNS.

Chambersburg Engineering Co.

W. H. DERBYSHIRE, President.

Office and Works—CHAMBERSBURG, PA.

Pittsburg Agents—MANNING, MAXWELL & MOORE, Park Building.

New York Agents—J. D. MILLER & CO., 39 Cortlandt St., New York City.

Priestman Oil Engine Burns OIL, Not GASOLINE.

Safety, High Efficiency,
Small Fuel Consumption,
No Engineer,
No Steam Boiler,
No Ashes.

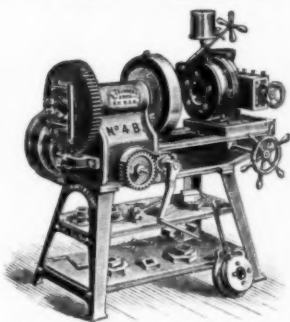
Can be used for any purpose.

SEND FOR CIRCULAR.

PRIESTMAN & CO., Inc.
Bourse Building,
PHILADELPHIA, PA.

D. SAUNDERS' SONS,

MANUFACTURERS OF



No. 4 B Machine, 1-2 to 4-in. Hand or Power.

PIPE CUTTING AND THREADING MACHINES

FOR HAND AND POWER.

All sizes 1/4 inch to 18 inch for Pipe Mill, Gas and Steam Fitters' use. Tapping Machines for steam fittings. Also

STEAM and GAS FITTERS' HAND TOOLS

SEND FOR CATALOGUE.

31 Atherton St., Yonkers, N. Y.

STEEL CASTINGS

FROM 1 TO 40,000 POUNDS WEIGHT

Of Open Hearth, or Chester Steel.
True to Pattern, Sound, Solid.

Gearing of all kinds, Crank Shafts, Knuckles for Car Couplers, Cross Heads, Rockers, Piston Heads, etc., for Locomotives.

STEEL CASTINGS OF EVERY DESCRIPTION.

CHESTER STEEL CASTINGS CO.

Works, Chester, Pa. Office, 407 Liberty St., Phila., Pa.



STAMP SHOES.

STAMP DIES.

Adamantine SHOES and DIES

AND CHROME CAST STEEL.

Cams, Tappets, Bosses, Roll Shafts and Crusher Plates.

Also rolled parts for Huntington and other mills

These casting are extensively used in all the Mining States and Territories of North and South America. Guaranteed to prove better and cheaper than any others. Orders solicited subject to above conditions. When ordering send sketch with exact dimensions. Send for illustrated circular

CHROME STEEL WORKS, Kent Ave., Keap and Hooper Sts., BROOKLYN, N. Y.

CARBORUNDUMBest Wheel Made for Saw Gumming.
Will not Burn or Case Harden.

Replacing Emery in Grinding and Polishing and Ferro-Silicon in Steel Making.



THE LATEST AND BEST. SEND FOR CATALOGUE AND PRICES.

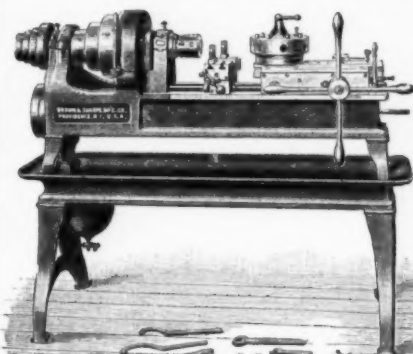
WM. W. ACHESON, Southern Representative, Box 58, Jacksonville, Fla.

NORTON Emery and Corundum Wheels.Contain Nothing but Cutting Properties. Are Free from Dust or Odor. Fast Cutting and Durable. Porous and Open.
Do not Heat the Work.

... WILL WORK EQUALLY WELL WET OR DRY ...

Send for New Illustrated Catalogue.

THOMAS K. CAREY & BROS. CO., Agents, BALTIMORE, MD.



No. 6 MACHINE, Back Geared.

Brown & Sharpe Mfg. Co.

PROVIDENCE, R. I.

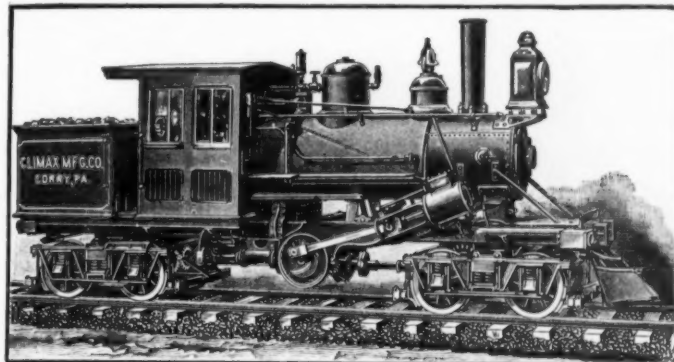
UNIFORMITY and ACCURACY in the finished product is secured by the use of

Screw Machines,

which often do more and better work than the Lathe.

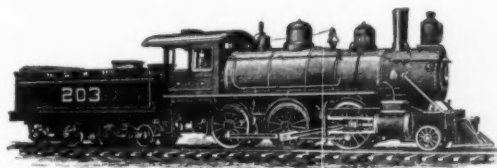
The No. 6 is, by its size and capacity particularly well adapted for general shop use.

We are pleased to answer all correspondence in regard to our machines, and will forward catalogue to any address.

NEW YORK OFFICE:
136 Liberty Street.CHICAGO OFFICE and STORE:
23 South Canal Street.**Tramway Locomotives and Cars** For Steel, Iron, Wood or Pole Road.

Weight of Locomotives from eight to thirty-five tons. Every wheel a driver. Adapted for steep grades, sharp curves and uneven track. CATALOGUES FREE.

CLIMAX MFG. CO., BUILDERS, CORRY, PA.

BALDWIN LOCOMOTIVE WORKS.

No. 203.—Built for the Rio Grande Western Railway.

SINGLE EXPANSION and COMPOUND LOCOMOTIVES

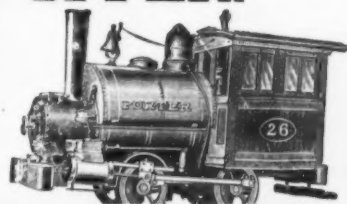
Adapted to every variety of service and built accurately to standard gauges and templates. Locomotives for Logging Railroads and Sugar Estates, Electrical Locomotives, Steam Tramway Motors, Mine Locomotives, Furnace Locomotives.

BURNHAM, WILLIAMS & CO. Philadelphia, Pa.

SPECIAL OFFER.

On bona fide request of any railroad contractor, or mine, mill, furnace, plantation, logging or other railway owner or operator, or other prospective buyer, we will mail free our new 216 page pamphlet describing 304 designs Light Locomotives, steam, electric and compressed air. To accommodate persons not requiring locomotives, a copy will be sent on receipt of 50 cents.

H. K. PORTER & CO.

6th Avenue, PITTSBURGH, PA.
Locomotives, narrow and wide gauge, always on hand.**HANSELL SPRING COMPANY**
MANUFACTURERS OF
RAILWAY & MACHINERY SPRINGS
OF HIGH GRADE CRUCIBLE STEEL, OIL TEMPERED:
JAPANESE, TINNED & COPPERED. Send for Catalogue 915
FURNITURE SPRINGS. ALLING ST. NEWARK, N.J.**PURE SAPPHIRE CORUNDUM AND EMERY WHEELS.**

THE BEST FOR ALL PURPOSES.

WRITE FOR PRICES.

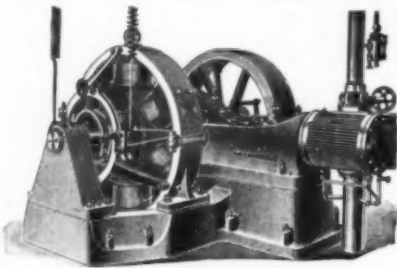
SCRANTON CORUNDUM AND EMERY WHEEL WORKS,
SCRANTON, PA.

SALES AGENTS:

BAILEY-LEBBY CO., - Charleston, S. C.
 WM. KEHOE & SON, - Savannah, Ga.
 AVERY & McMILLAN, - Atlanta, Ga.
 SALEM IRON WORKS, Salem, N. C.
 HAUBTMAN & LOEB, - New Orleans, La.

SALES OFFICES:

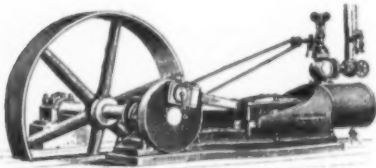
38 Cortlandt Street, NEW YORK, N. Y.
 8 Oliver Street, - BOSTON, MASS.
 512 Fidelity Mutual Building,
 PHILADELPHIA, PA.
 1452 Monadnock Building,
 CHICAGO, ILL.



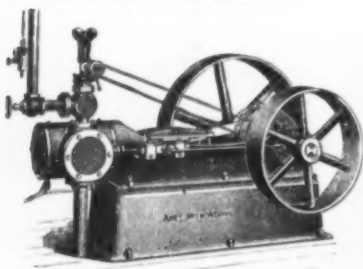
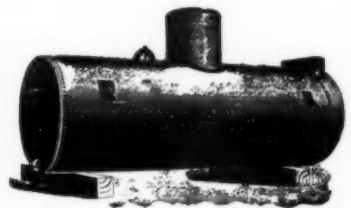
"Ames" High Grade
Direct Connected Automatic Engine.

AMES IRON WORKS,

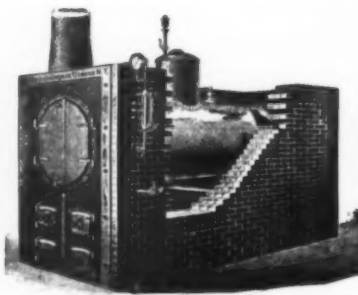
OSWEGO, N. Y.



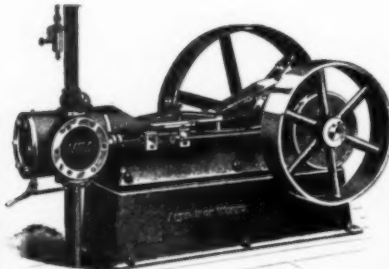
"Regal" Balance Valve
Side Crank Throttling Engine.



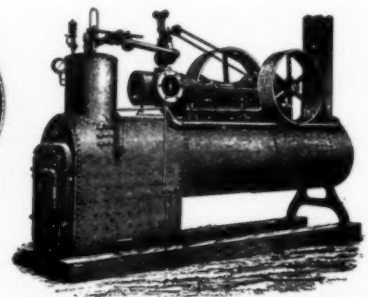
"Vim" Balance Valve
Center Crank Throttling Engine.



All kinds of Boilers.



"Vim" Automatic Engine.

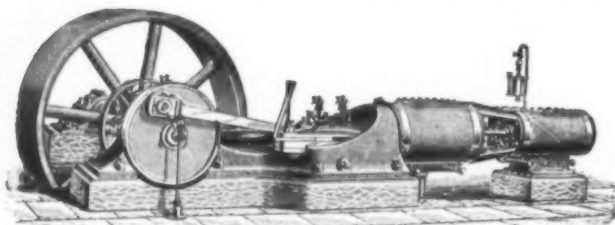


BUCKEYE ENGINE COMPANY,

SALEM, OHIO.

BALTIMORE OFFICE—Manufacturers' Record Building.

J. T. CASTLE Sales Agent.



Correspondence solicited from parties wanting high-grade work.

Horizontal and Vertical ENGINES

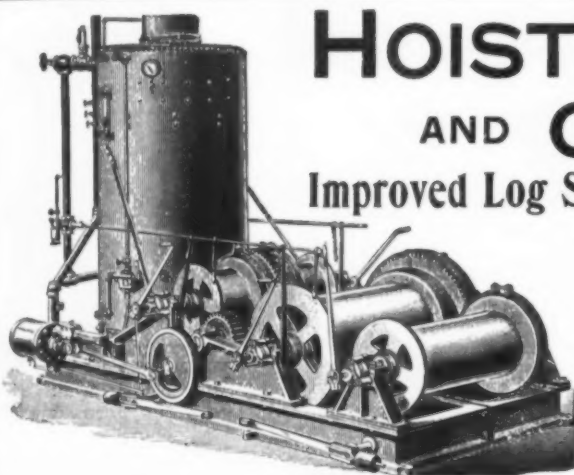
Simple, Compound and Multiple Cylinder,
Condensing and Non-Condensing,
for all Classes of Work.

HIGHEST ATTAINABLE ECONOMY GUARANTEED.

KEELING MACHINERY CO., Sales Agents, 21 South Forsyth St., ATLANTA, GA.

HOISTING ENGINES AND CABLEWAYS.

Improved Log Skidding & Pull Boat Machinery.



Why is our Skidder Superior to any Other?

- 1—We furnish a larger Boiler.
- 2—We furnish a larger Engine.
- 3—We furnish a Self-Lubricating Block.
- 4—Our carriage contains features new and novel, which will recommend it over all others.
- 5—We furnish better Cables.
- 6—Our prices are based on a fair and legitimate profit.

LAMBERT HOISTING ENGINE CO.

Send for our new
Catalogue Q.

117 Main Street, Cambridgeport, Mass.

Salesrooms—143 Liberty St., New York.

NEWARK, N. J.

C. S. BURT
CO., Ltd.

Agents,

New Orleans,
La.

732 and 734
Union Street.

THE MURRAY IRON WORKS CO., BURLINGTON, IOWA.

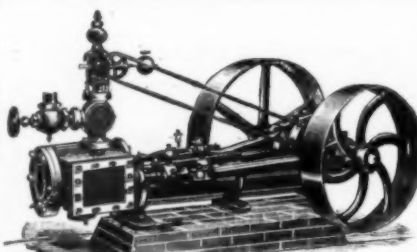
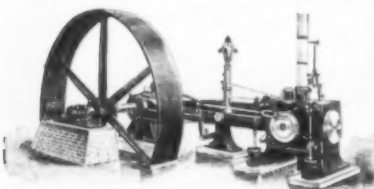
SIOUX CORLISS ENGINES.

Simple and Compound. Direct Connected when desirable.

These Engines are built from new patterns. They are not old fashioned nor of conventional design, but they embody the latest ideas in mechanical engineering. They excel in regulation, economy and efficiency, and the World's Fair diploma awarded them contains these among other words of high praise:

"ADMIRABLY ADAPTED FOR ELECTRIC LIGHTING."

Our No. 28 Catalogue takes up and illustrates all points. Send for it. We carry in stock eight of the sizes of simple engines most in demand, and can build compounds in a reasonable time.



Counter-Balanced Center Crank Engines,

MANUFACTURED BY
The HIGH POINT MACHINE WORKS,
High Point, N. C.

ALSO MANUFACTURERS OF
Variable Feed Saw Mills and Cotton Mill Castings.

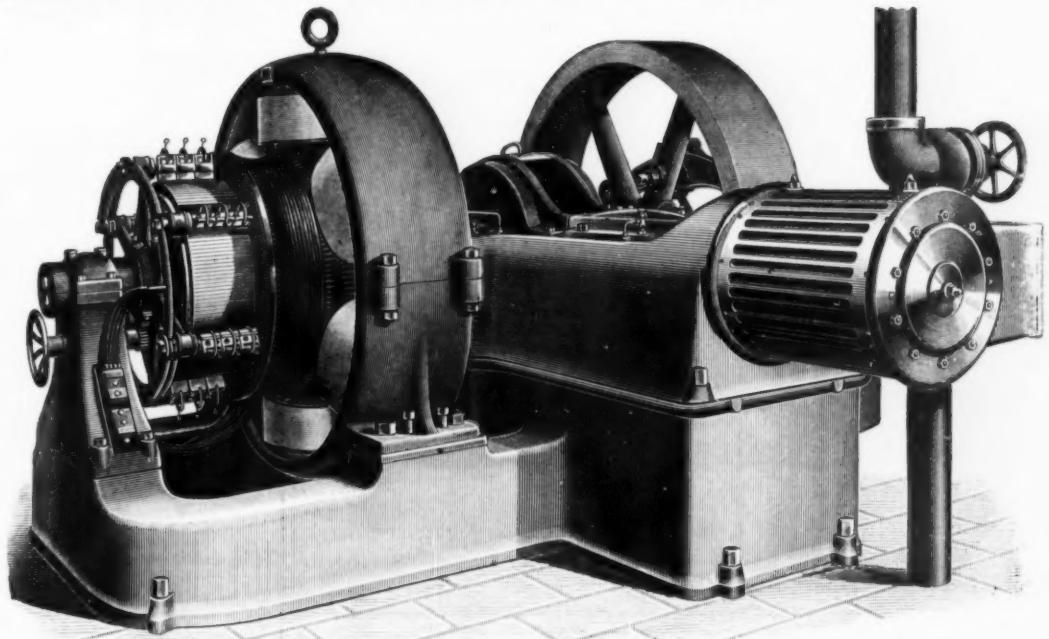
AMERICAN-BALL ENGINES

COMBINED WITH OUR

NEW SIX-POLE DIRECT-CONNECTED GENERATORS

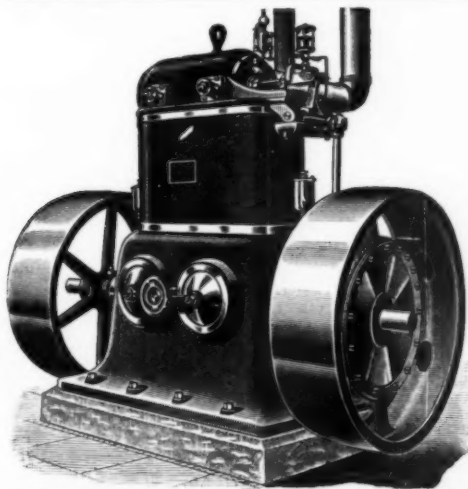
A NEW COMBINATION OF HIGHEST EFFICIENCY!

SELF-OILING
ENGINE!
SELF-REGULATING
GENERATOR!
NO BRUSH
MOVEMENT!
NO SPARKING
AT COMMUTATOR!
NO OIL CUPS
OR CANS!
NO HOT
BEARINGS!
NO NOISE
OR VIBRATION!



A Compact Plant of Symmetrical Design Generating a Maximum Current from a Given Consumption of Steam and with Minimum Attention.

AMERICAN ENGINE COMPANY, - BOUND BROOK, New Jersey.



THE WESTINGHOUSE MACHINE COMPANY, Manufacturers.
WESTINGHOUSE, CHURCH, KERR & COMPANY, Engineers.

TEN YEARS AGO, the Westinghouse Compound Engine, made the world's record for economic duty of non-condensing engines.

THAT RECORD WAS ATTESTED by an engineer of unquestioned ability and standing. IT HAS BEEN VERIFIED by able experts, many times since.

IT STANDS TO THIS DAY UNTOUCHED.

Shops at PITTSBURG and CHICAGO.

OFFICES:

NEW YORK, 26 Cortlandt Street. BOSTON, 53 State Street. CHICAGO, 171 La Salle Street.
PITTSBURG, Westinghouse Building. DETROIT, Union Trust Building.
PHILADELPHIA, M. R. MUCKLE, Jr., & CO., Drexel Building.

ENGINES, BOILERS, SAW MILLS, PRESSES.

Write to

GENERAL MANUFACTURERS OF

MECKLENBURG IRON WORKS, Charlotte, N. C.

MACHINERY

ENGINES ESTABLISHED 1851 BOILERS

ALL KINDS OF IRON TANKS & SMOKE STACKS BUILT IN ANY PART OF THE COUNTRY

STRUTHERS WELLS & CO.

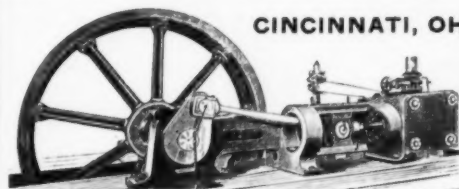
ALL CLASSES OF STATIONARY AND PORTABLE BOILERS FROM STOCK OR FROM SPECIFICATIONS

WARREN, PENNA.

STANDPIPES CORRESPONDENCE SOLICITED TANKS

THE LANE & BODLEY COMPANY

CINCINNATI, OHIO.



ENGINES

ALL SIZES.

Simple and Compound.

COLUMBIAN CORLISS ENGINE.

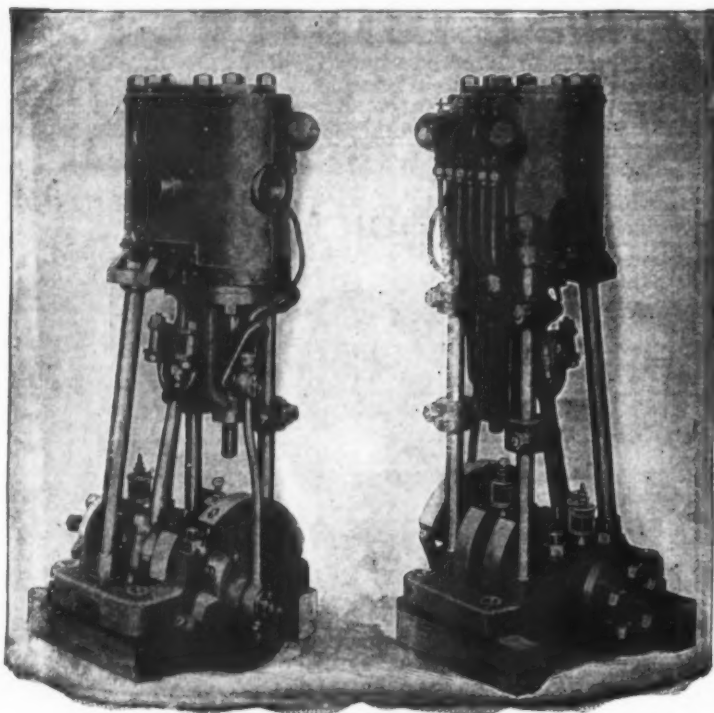
Slide Valve Engines, Shafting, Hangers, Pulleys, Freight Elevators, Saw Mills, Etc.

GAS and GASOLINE ENGINES

1 to 100 horsepower. New illustrated catalogue free.

LAMBERT GAS & GASOLINE ENGINE CO., 710 W. Third Street, Anderson, Ind.





THIS ENGINE is one of a class furnished the U. S. Lighthouse Service for electric lighting. Cylinders 5" x 5", 500 revolutions, 100 lbs. steam, 10 Horse-Power. Weight of engine complete, 306 lbs. Occupies a floor space of 18" x 11". Height from centre of shaft, 28 3/8". Sight feeds with oil ducts to all moving parts.

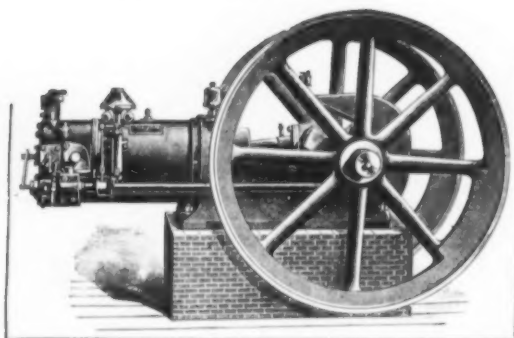
W. D. FORBES & CO.

64 13th Street,
Two blocks from 14th St. Ferry.

HOBOKEN, N. J.

"OTTO" Gas Engines,

ALL SIZES.



THE "OTTO"
GAS ENGINE WORKS,
Philadelphia.

SMITH-COURTNEY & CO.
Richmond, Va.

50,000
IN USE.

OUR NEW 1897

Gas and Gasoline ENGINES

ARE THE

MOST RELIABLE.

Highest Efficiency for Electric Lighting,
Giving a Regular Steady Speed.

Simplest and Best for General Power,
Being Clearly and Perfectly Safe.

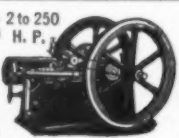
Write for our new Catalogue and state kind of work you require engine for, amount of power, and whether you will use gas or gasoline, and we will make you proposition that will bring the order.

Mention the Manufacturers' Record.

THE J. W. RUGER MFG. CO.

214-222 Chicago Street,
BUFFALO, N. Y.

FOOS GAS AND GASOLINE ENGINES
EXCEL ALL OTHERS IN DESIRABLE FEATURES.
Adapted for ALL Power Purposes—Electric Lighting, Milling, Mining, Water Works, Elevators, Factories, etc. Cheaper and better than steam. WRITE BEFORE PURCHASING.
FOOS GAS ENGINE CO., Springfield, Ohio.



Ice Making Machinery.

DOUBLE AND SINGLE ACTING. AMMONIA VALVES AND FITTINGS.

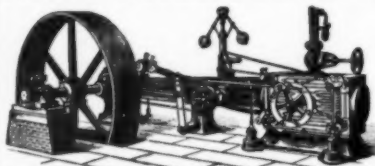
JOHN FEATHERSTON'S SONS, 354-358 N. Halsted St., Chicago, Ills.

NEWBURGH ICE MACHINE & ENGINE CO.

Successors to

Whitehill Engine & Pilet Ice Machine Co.

Office and Works, NEWBURGH, N. Y.
New York Office, 44 Taylor Building,
39-41 Cortlandt Street.



Whitehill Corliss Engines,

SIMPLE, COMPOUND AND CONDENSING.

Ice and Refrigerating Machinery. Iron and Brass Castings

Ice-Making and Refrigerating Machinery. Eclipse Corliss Engines.

FRICK COMPANY,

Engineers, Builders,

WAYNESBORO, PA.

NEW YORK OFFICE, Taylor Building, 39-41 CORTLANDT ST.

40 to 1000 Horse-Power Made—Condensing, Non-Condensing and Compound.

Send for Ice Machine Circular. Send for Corliss Circular.

SPECIAL HIGH-SPEED AUTOMATIC ENGINES, STEAM BOILERS,

Send for our General Catalogue. TRACTION and PORTABLE ENGINES, SAW MILLS.

YORK MANUFACTURING COMPANY,

YORK, PENNA.

P. H. GLATFELTER, PRES.

W. L. GLATFELTER, Sec'y & Treas. THOS. SHIPLEY, Gen'l Mgr.

MANUFACTURERS OF

ICE MAKING AND REFRIGERATING MACHINERY

FOR ALL PURPOSES.

We also make Steam Engines, Boilers and Complete Power Plants, Castings, Stacks, Stand Pipes, Tanks and General Wrought Iron Work.

WRITE FOR PRICES.

BRANCH OFFICES:

NEW YORK CITY.

PHILADELPHIA, PA.

PROVIDENCE, R. I.

INDIANAPOLIS, IND.

CINCINNATI, OHIO.

HOUSTON, TEX.

REMINGTON MACHINE CO. WILMINGTON, DEL., U.S.A.

New York Office, 136 Liberty St.

BUILDERS OF

Refrigerating and Ice-Making Machinery

From one-half to fifty tons capacity. We make a Specialty of SMALL MACHINES and have the most successful system of Mechanical Refrigeration for Dairies, Packing-Houses, Hotels, Market-Houses, Steamships, and wherever a moderate amount of refrigeration is required.

The Remington Vertical Ammonia

COMPRESSORS

are built either with engine direct connected on same base or for belt power.

They are the SIMPLEST, MOST COMPACT and EFFICIENT MACHINES yet designed for this purpose.

Skilled help not required for their operation. BAKER & HAMILTON, San Francisco, Cal., Sole Pacific Coast Agents.



The Fred. W. Wolf Company,

139-143 Rees St., Foot of Dayton St.,

CHICAGO, U. S. A.

Ammonia Fittings and Refrigerating Machine Supplies.

Have you seen our No. 5 Catalogue of Fittings and Supplies?



Start in the New Year with our superior qualities of Fittings You will never regret it.

Eastern Branch—Leonard C. Schmitt, 209 E. 94th Street, New York.
Southeastern Branch—E. E. Egan, 40 W. Alabama Street, Atlanta, Ga.
Southwestern Branch—E. P. Maddox, Fort Worth, Texas.
Western Branch—Clot & Meere, 167 Fremont Street, San Francisco, Cal.



The American Fuel Economizer

(BURPEE'S PATENTS.)

FOR UTILIZING WASTE HEAT FROM STEAM BOILERS.

No large steam user can afford to run without an Economizer. The "American" is the best Economizer in the world.

It will heat the feed water to a higher temperature than is obtainable by any other means except live steam.

BROOMELL, SCHMIDT & CO., Limited,

Sole Manufacturers.

Main Office and Works, YORK, PA.

Cable Address, Broomell, York. "A. S. C." Code, Fourth Edition. SEND FOR CATALOGUE.

SPECIAL NOTICE.—We have no agents who are authorized to quote prices. Please communicate with us direct. We are always glad to send expert engineers to look over the ground and submit estimates. It requires an expert knowledge of the economizer business to properly determine what is required.

BOSTON, MASS. 8 OLIVER ST. CHICAGO, ILL. 910 MASONS' TEMPLE CINCINNATI, OH. 906 N. LAUREL BLDG. PITTSBURGH, PA. CARNEGIE BLDG.

BABCOCK & WILCOX BOILERS

THE BABCOCK & WILCOX CO.

29 CORTLANDT ST. NEW YORK.

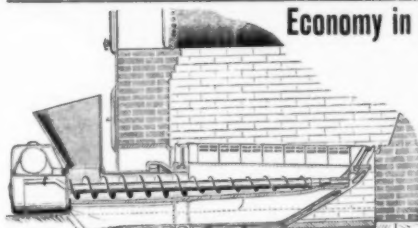
SEND FOR BOOK ON STEAM.

NEW ORLEANS, LA. 333 CANAL ST. SAN FRANCISCO, CAL. 32 FIRST ST. ATLANTA, GA. 89 EQUITABLE BLDG.

AWARDED THE GRAND PRIZE AT THE LATE PARIS EXPOSITION.

WILKINSON STOKER,

The Great Money and Labor Saver. WILKINSON MFG. CO., 678 Bourse Bldg., Phila. or Bridgeport, Pa.



SIDE VIEW OF STOKER.

Economy in Fuel, Prevention of Smoke, Increase in Capacity are not only claimed, but Guaranteed

BY THE USE OF THE

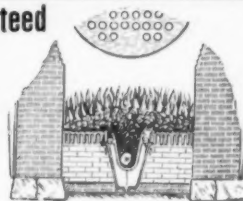
AMERICAN STOKER

COMPACT
POSITIVE
PRACTICAL

The fact that our Stoker has no mechanical parts in contact with the fire distinguishes it from all other forms of Stokers and insures a low cost of maintenance. As our system is not dependent upon natural draft, it is especially adapted to meet the requirements of a variable power demand.

Used and Endorsed by such firms as the Edison Electric Illuminating Co., Brooklyn, N. Y.; Carnegie Steel Co., Pittsburgh, Pa.; Shoenberger Steel Co., Pittsburgh, Pa.; Detroit Steel Co., Detroit, Mich.; Anheuser-Busch Brewing Association, St. Louis, Mo.; Akron Street Railway and Illuminating Co., Akron, Ohio; Cincinnati Street Railway Co., Cincinnati, Ohio, and many others.

The American Stoker Company,

Washington Life Bldg.,
NEW YORK.

END VIEW.

Send for New Catalogue.

SMITH-COURTNEY CO.,

Richmond, Va.

Southern Agents for the

Improved Bates Corliss Engine

From 50 to 1000 Horse-power.

THE ENGINE for Cotton Mills and Large Factories.

Also full line of Engines, Boilers, Iron and Woodworking Machinery and Pumps. Largest stock of Railroad, Mine and Mill Supplies in the South.



STORES:
BOSTON, NEW YORK,
CHICAGO, LONDON, ENG.

CROSBY RECORDING GAGES.

Patent Gage Testers,
Pressure Recorders,
Revolution Counters,
Feed Water Regulators,
Pop Safety Valves,
Water Relief Valves,
Original Single Bell Chime
Whistles,

Improved Steam Gages,
Steam Engine Indicators,
Branden Pump Valves,
Sight Feed Lubricators,
Recording Gages,
Ammonia and Gas Indicators,
Ammonia Gages,
Vacuum Gages,



Perfectly accurate and Reliable
for Recording any Kind or Degree
of Pressure wanted.

Main Office and Works:
BOSTON, MASS.

CROSBY STEAM GAGE & VALVE CO.,

The National Feed Water Heater

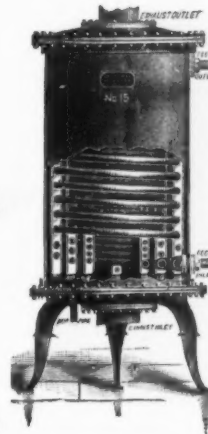
Delivers Water to the Boiler at 212° F.

800,000 H. P. in Daily Use

No Inside Joints to Leak.
No Straight Tubes to Leak.
No Back Pressure is Possible.
No Contact of Water with Shell or Iron.
No Chance for Grease in Boiler.

Economy of

Coal, Space and Price.



WE ALSO MAKE

COILS AND BENDS

OF

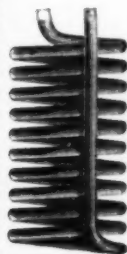
Iron, Brass and Copper

PIPE.

ADDRESS

THE NATIONAL PIPE BENDING CO.

97 Lloyd Street, NEW HAVEN, CONN.



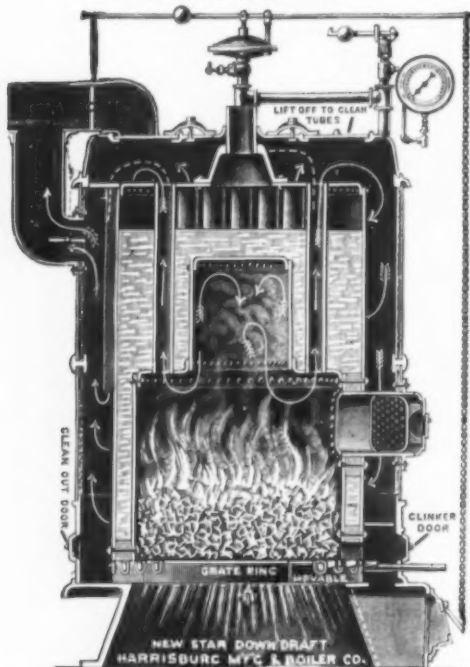
PITTSBURGH FEED WATER HEATERS.

Made in all Styles Open and Closed Types. Complete Line.

Write for Illustrated Cat. PITTSBURGH FEED WATER HEATER & ENG. CO., Pittsburgh, Pa.

NEW STAR DOWN DRAFT BOILER

THE NEW STAR
DOWN-DRAFT STEAM BOILER
Built of Steel, 60,000 T. S.



Heat travels three times the length of the Boiler.
Capacity, from 235 to 1,600 square feet direct steam radiation.

for STEAM and HOT WATER.

Sizes for Steam 235 to 1600.
for Hot Water 410 to 2400 square feet direct radiating surface.

OPERATION.

Boiler is operated either straight or down draft, simply by opening and closing dampers in connections.

Efficiency tubes being of charcoal iron and shell of soft steel or iron, heat is transmitted quicker to the water than if the material was cast iron.

Economy is obtained by keeping heat and gases in contact with water surface for the distance of three times the length of boiler.

Fire Box is large and deep enough to carry fire and give heat for hours without attention.

Grates are of improved shaking and dumping pattern. All effective surface; clean perfectly around fire box of boiler. Slicing bar can be used through opening in front of boiler.

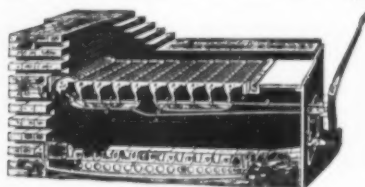
Cleaning heating surface is rarely necessary, owing to its position. Covers are provided in dome to pass brush through tubes. All soot, etc., dropping into space between casing and boiler, can be removed through doors in section around base.

We wish every Plumber and Steam Fitter to apply for a copy of our Catalogue; it will prove interesting.

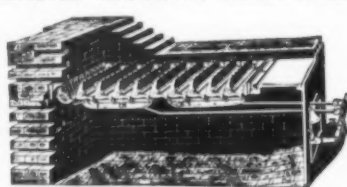
HARRISBURG MFG. & BOILER CO.
HARRISBURG, PA.

McCLAVE'S IMPROVED GRATE and ARGAND STEAM BLOWER

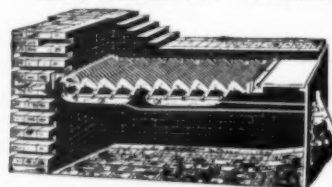
Send for Illustrated Descriptive Catalogue C. For BOILER and Other Furnaces.



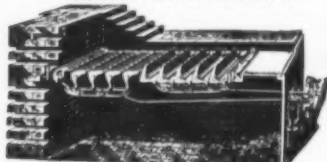
NORMAL POSITION OF GRATE.



WHOLE CUT-OFF MOVEMENT.



SHAKING MOVEMENT.



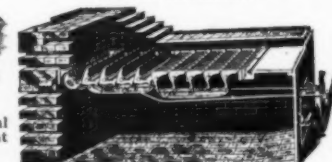
DIVIDED CUT-OFF MOVEMENT.



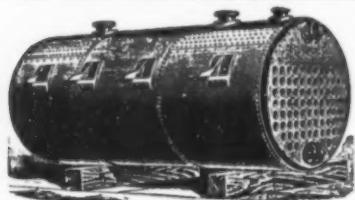
Argand Steam Blower.

These appliances together combine more valuable features for burning the smaller sizes of hard and soft coal, such as Anthracite, Culm, Birdseye, Buckwheat and Bituminous Slack, than any other system; while the Grate alone stands unequalled for burning the larger sizes of these fuels with natural draught. The Argand Blower gives excellent results in burning Spent Tan, Sawdust, Bagasse, &c.

McCLAVE, BROOKS & CO. SCRANTON, PA.



DIVIDED CUT-OFF MOVEMENT.



High-Grade **BOILERS**
ENGINES

and Complete Steam Power Outfits.

PIPE FITTING, VALVE AND
ENGINEERS' SUPPLIES.
BURROWS & CLARKE
AUTOMATIC PUMP GOVERNOR.

E. KEELER CO.
WILLIAMSPORT, PA.

HARTLEY'S BOILER WORKS

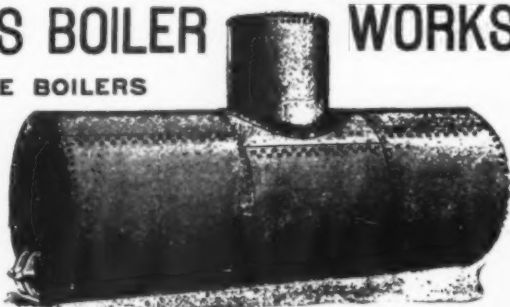
HIGH GRADE BOILERS

STANDPIPES, TANKS,
SMOKESTACKS, ETC.

A full line of
BOILERS,
FRONTS,
GRATE BARS and
Other Fixtures
always on hand.

All kinds of BOLTS made to order

MONTGOMERY,
ALA.

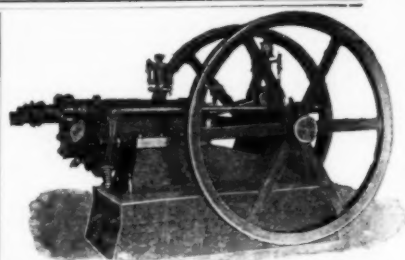


THE MEANS & FULTON IRON WORKS

AVENUE A AND 17TH STREET, BIRMINGHAM, ALA.

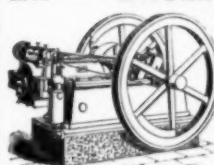
MANUFACTURERS AND BUILDERS OF BOILERS, TANKS, STAND PIPES AND BLAST FURNACES,
AND WORKERS SHEET IRON AND STEEL. ESTIMATES FURNISHED ON STRUCTURAL WORK.

RO. PRESTON MEANS,
PRES.
JOHN H. MEANS,
VICE-PRES.
W. M. FULTON,
MANAGER



The **MIAMI**, Uses any kind of Gas or Gasoline.
Send for Circular. Correspondence solicited.
THE MIDDLETOWN MACHINE CO., Middletown, Ohio, U. S. A.

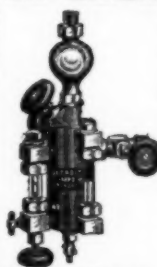
GAS AND GASOLINE ENGINES



Using Natural Gas,
Coal Gas Producer
Gas and Gasoline direct
from the tank.
1 to 40 H. P. Inter-
esting Catalogue.
THE SPRINGFIELD
GAS ENGINE CO.
10 W. Washington St.
SPRINGFIELD, Ohio.

The Life of an Engine

is Long or Short,
according to the
care bestowed upon
its vital parts.



THE DETROIT SIGHT FEED LUBRICATORS

protect these vital parts by keeping them perfectly lubricated, thus preventing wear from friction. Nearly 400,000 Detroit Lubricators are in use. Our Catalogue, showing our different styles for every kind of engine, will be sent on application.

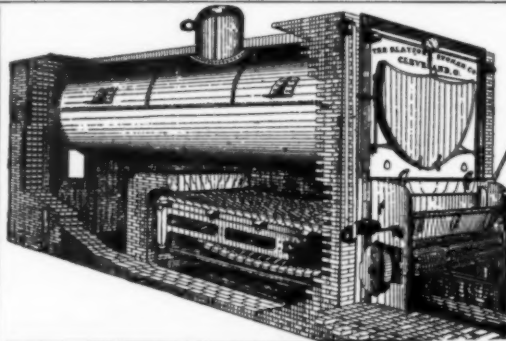
DETROIT LUBRICATOR CO., Detroit, Mich.

COAL AND ORE BUCKETS



SELF-DUMPING
AND SELF-RIGHTING
Side, End and Bottom Dump-
ing Cars, Steel Rails, Switches
and Curves, Iron Wheelbar-
rows, Hoisting Blocks, Etc.
G. L. Stuebner Iron Works
Long Island City, N. Y.

CATALOGUE



The Playford Mechanical Stoker

GUARANTEED TO
Abolish smoke, to increase
boiler capacity and to save
fuel.

For information, address
The Playford Stoker Co.
No. 161 Case Library Bldg.,
CLEVELAND, O.

BOILERS

With Rivet Holes Drilled after Plates are Bent and in Position, Tanks and Sheet Iron Works
Engines, Cotton Gins and Presses. Machinery for Fertilizer Works and Phosphate Washers, Asbes-
tos Magnesia Pipe Covering and Magnesia Cement Felting for Boilers, Domes, Steam Piping, etc.

VALK & MURDOCH IRON WORKS, Charleston, S. C.



The Tudor Boiler Manufacturing Co. Steam Boiler and Tank Makers

Office, 246 E. Pearl St. (opp. Pittsburg, Cin. & St. L. R.) Cincinnati, O.
SECOND-HAND BOILERS ALWAYS ON HAND.

IDEAL and SLIDE VALVE ENGINES.

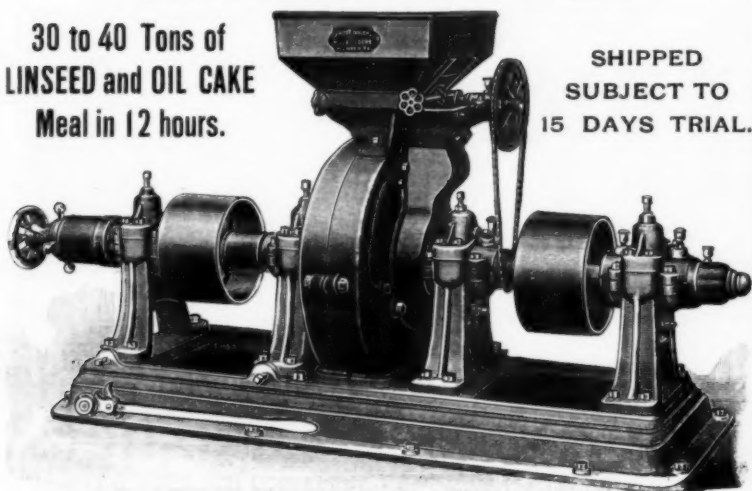
STEAM SUPPLIES and BOILERS.

WALLACE STEBBINS, 111 East German Street,
BALTIMORE, MD.

THE "MUNCY" ATTRITION GRINDING MILL

30 to 40 Tons of
LINSEED and OIL CAKE
Meal in 12 hours.

SHIPPED
SUBJECT TO
15 DAYS TRIAL.



Not necessary to remove belts to open mill. Contains Quick Release Springs, Movable Base, Self-Oiling Bearings, Perfect Feed, and our Patent Ball Bearing at end of Spindles. (Beware of infringements).

GUARANTEED to do as much work, both as to Quantity and Quality, as any mill built, and the manner in which it is constructed makes it the BEST MILL offered to the trade. Write for Prices.

SPROUT, WALDRON & CO.,

Builders of Flour, Meal and Feed Mills.

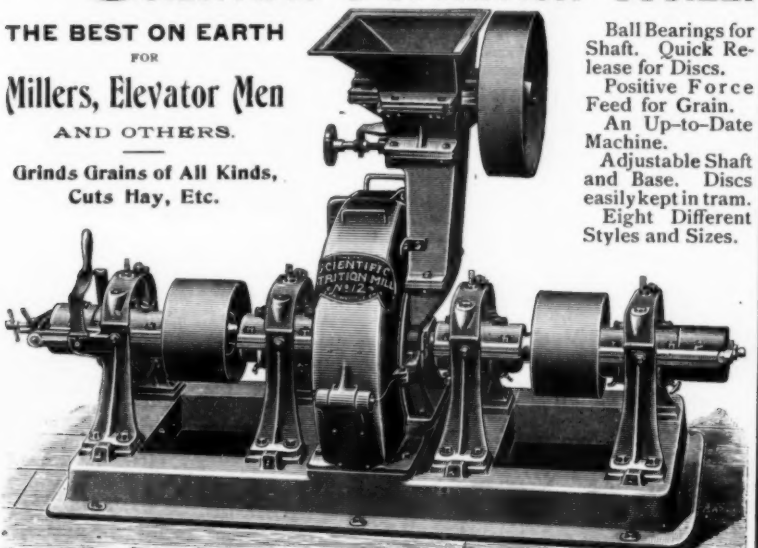
MUNCY, PENNA.

THE SCIENTIFIC ATTRITION MILL.

THE BEST ON EARTH
FOR

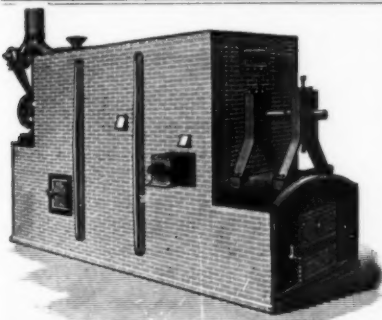
Millers, Elevator Men
AND OTHERS.

Grinds Grains of All Kinds,
Cuts Hay, Etc.



Ball Bearings for
Shaft. Quick Re-
lease for Discs.
Positive Force
Feed for Grain.
An Up-to-Date
Machine.
Adjustable Shaft
and Base. Discs
easily kept in tram.
Eight Different
Styles and Sizes.

THE FOOS MFG. CO., Springfield, O.



The Wing Dryer and Calciner

Possesses Special Regulating Devices.
Economically Handles Raw and Waste Products.

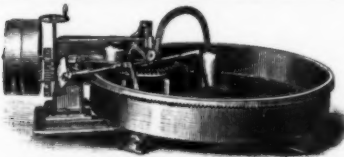
SEND FOR CATALOGUE.

Manufactured
by **R. DUNBAR & SON,**

Chemical Engineers,

BUFFALO, N. Y.

Office and Works—Perry and Mississippi Sts.



Dempwolf MIXING MACHINE

FOR FERTILIZER MIXING,
Acidulating and other purposes where first-
class mixing is required.

Capacity from 20 to 350 tons per day.

C. H. DEMPWOLF & CO., YORK, PA

Dauids' Patent

Send for Catalogue.

Disintegrating Mill.

JAMES MURRAY & SON, 102 TO 104 YORK ST., BALTIMORE, MD.

For Bones, Phosphates, Tankage, Ores, Clay,
Fish, Scrap, Salt Cake, etc. Fertilizer
Machinery, Mixers' Rolls, Breakers, etc.,
etc. Marine Railways, Clay Temperers.

WE HAVE SOLD WITHIN 90 DAYS

SIXTY GRIFFIN MILLS

to the largest Cement Manufacturers,
among them being the

American Cement Co.
Alpha Portland Cement Co.
Lehigh Portland Cement Co.
Bonneville Cement Co.

Vulcanite Portland Cement Co.
Peerless Portland Cement Co.
Glens Falls Portland Cement Co.
Castalia Portland Cement Co.

because they believed that The Griffin Mill beyond doubt does
the best possible work at the smallest possible expense.

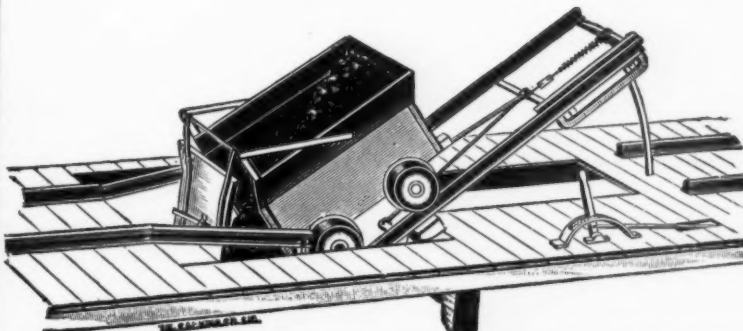
We will gladly send you full informa-
tion, and very many American and Foreign
references regarding it if you desire them.

BRADLEY PULVERIZER CO.,

92 STATE STREET, BOSTON, MASS., U. S. A.

THE WILSON AND MITCHELL

Automatic Coal and Ore Dumps.



THESE MACHINES largely increase the output of a mine and reduce the operating
expenses. After the coal has been dumped the empty car passes automatically through the
dump, allowing the loaded car to follow it without the delay occasioned when the empty has
to be switched back before the load can come forward. Both loaded and empty cars are handled
by gravity, causing a great reduction in labor over the ordinary method.

The Dumper has complete control of the car when dumping, which secures the minimum
breakage with the most perfect screening, as the coal goes over the screens evenly and smoothly
and without jar.

4488 tons of LUMP COAL have been loaded over one of these dumps
in a day of ten hours.

DUMPS FOR SPECIAL PURPOSES BUILT TO ORDER.

Diamond Core Drills. Coal Mining Machinery. Coal Mine Supplies.

SULLIVAN MACHINERY CO.

Eastern Office and Works, CLAREMONT, N. H.

Pittsburg Office, Schmidt Bldg., 339 Fifth Ave.

54 to 60 N. Clinton St., CHICAGO, ILL.

Muirhead Machine Works,

Drilling and Fishing Tools.

Oil, Gas and Artesian Well Supplies,

Muirhead's Patent Drive Pipe.

Sullivan Diamond Core Drills for Sale.

Diamond Setting a Specialty.

Boilers, Pumps and Engines.

Correspondence solicited.

PITTSTON, PA.

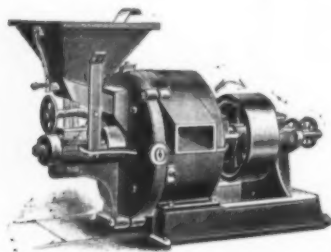
Mention this paper

The Best Crushing, Grinding and Pulverizing Machinery at the Lowest Prices.

Also DRYERS and General Mill Furnishings.

CORRESPONDENCE SOLICITED.

J. R. ALSING COMPANY, 60 and 62 New Street, NEW YORK.



ROCK

CRUSHERS,

FRENCH BUHR & ESOPUS STONES

EMERY

MILLS

AND

MILLSTONES.

Send for Circular.

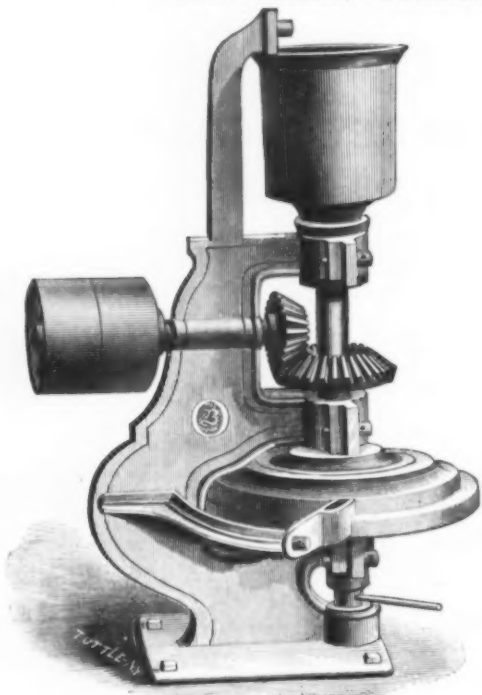
STURTEVANT MILL CO.,
BOSTON, MASS.



Will Grind Anything

NEVER become heated at any rate of speed.
Require LITTLE POWER to drive them.
ANY BOY can ATTEND to them.
WEAR and TEAR LESS than any other mill.
MORE ECONOMICAL than any mill for same amount of work.
SELF-FEEDING, PORTABLE.

BOGARDUS
UNIVERSAL



Nos. 3 and 4 Mill with Gears.

ECCENTRIC
MILLS

AN ENTIRELY NEW PRINCIPAL.

Let us send Descriptive Books and quote prices.

J. S. & G. F. SIMPSON, BROOKLYN, N. Y.
26-36 RODNEY ST.

EMPIRE ROLLER "SAINT LOUIS."

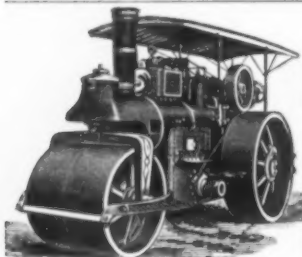
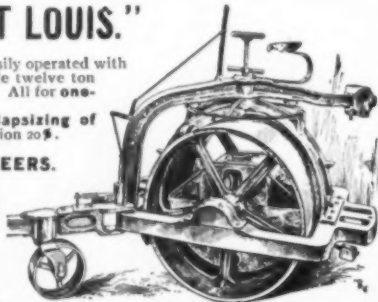
A six and half ton roller loaded to (8) tons, easily operated with four horses, producing 280 lbs. pressure while twelve ton Steam Rollers have only 272 lbs. per lineal inch. All for one-sixth their cost.

Weight of carriage below shaft prevents Capsizing of Roller, equalizing the load, reducing the friction 20%.

RESULTS WILL INTEREST ENGINEERS.

SUITS are now pending against F. C. Austin Mfg. Co., and the Western Wheel Scraper Co., for infringement on our Patented Roller.

Pope Reversible Street Roller Co.
No. 5 Laclede Bldg., Saint Louis, Mo., U. S. A.



"RUSSELL" STEAM ROAD ROLLERS.

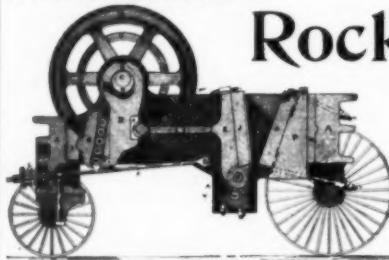
BUILT IN ALL SIZES.

FOR CONTRACTORS, CORPORATIONS AND MUNICIPALITIES.

RUSSELL & CO., Massillon, Ohio.

JULIAN SCHOLL & CO., Agents, 126 LIBERTY STREET, NEW YORK, N. Y.

WE WANT RELIABLE
AGENTS
TO SELL OUR IMPROVED LINE OF



KEYSTONE CRUSHER & ROLLER CO.,
PITTSBURGH, PA.

Rock Crushers,
ROAD ROLLERS

AND

DUMP WAGONS.

Also PORTABLE ENGINES, SCREENS
and ELEVATORS.

SEND FOR ILLUSTRATED CATALOGUE

PHOSPHATE MACHINERY & SUPPLIES.

Engines, Boilers, Saw Mills.

Shafting, Hangers, Wood Split Pulleys, Steam Pumps, Centrifugal Pumps, Steel Rails, Spikes and Fastenings, a Full Line of Railroad Supplies, and a Full Line of Bar Iron, Iron Pipe, Valves, Fittings, Rubber and Leather Belts.

Agents for CUMMER'S DRYER.
Write for our large Illustrated Catalogue. The Cameron & Barkley Co., Charleston, S. C.

THE BAILEY-LEBBY CO. Fertilizer and Phosphate Machinery

A SPECIALTY.

Complete Steam
and Automatic
Sprinkler Plants
For Cotton Mills.

Railroad and Mill Supplies, Engines, Boilers, Saw, Corn and Cane Mills, Rubber and Leather Belting, Hose, Packings, Pipe Fittings and Brass Goods, Wood Pulleys, Shafting and Hangers. A full stock of Plumbing Goods always on hand. Largest stock of Supplies South. Lowest prices. Prompt shipments. Plans, specifications and large illustrated catalogue furnished upon application. Try the B.-L. Co. Anti-Friction Babbitt Metal, the BEST for HIGH-SPEED machinery.

CHARLESTON, S. C.



THE
"New South"
BRICK
MACHINERY.

Mfd. by J. C. STEELE & SONS, Statesville, N. C.
Send for catalog and price list.

FLOURING MILL MACHINERY.
BUILT BY CONTRACT.
ROLLER BUHR SYSTEM
FRENCH BUHR MILLS
OVER 20,000 IN USE A BOY
CAN OPERATE
A COMPLETE MILL
AND SHELLER LESS
THAN \$100. REDUCED
PRICES FOR SEASON
OF 1894. EVERY MILL
WARRANTED 100% MILL
AND FULLY EQUIPPED.
NORDYKE & MARMON CO.
86 DAY ST. INDIANAPOLIS, IND. U. S. A.

PERFORATED SHEET METAL
OF ALL KINDS, FOR ALL USES
FOR COAL, ORE, STONE AND SPARK SCREENS,
JIGS, WAGGERS, STAMP BATTERIES, PULP
SMELTING WORKS, SILVER REFINING, &
CONCENTRATING WORKS, & ALL
SEPARATING MACHINERY.
A. J. BECKLEY & CO., Garwood, N. J.

MCLANAHAN & STONE,
Engineers & Manufacturers,

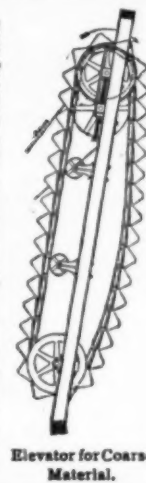
Gayport Foundry, Hollidaysburg, Pa.

IMPROVED WASHERS

For Phosphate, Iron, Manganese

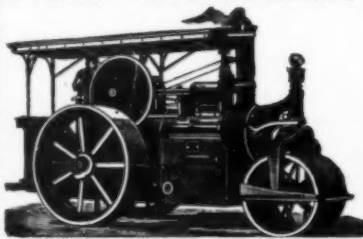
and other Ores.

Revolving Screens, Elevators and Conveyors.



Elevator for Coarse
Material.

STEAM ROAD ROLLERS.



THE O. S. KELLY CO.
SPRINGFIELD, O.

CARBON
Black Diamonds,
FOR
DIAMOND DRILLS.
THE S. DESSAU CO.
37 & 39
Maiden Lane
N. Y.

**American
Diamond
Rock Drill Co.**
Diamond Pointed Core Drills.
120 LIBERTY ST., NEW YORK.
P. O. BOX 1442.

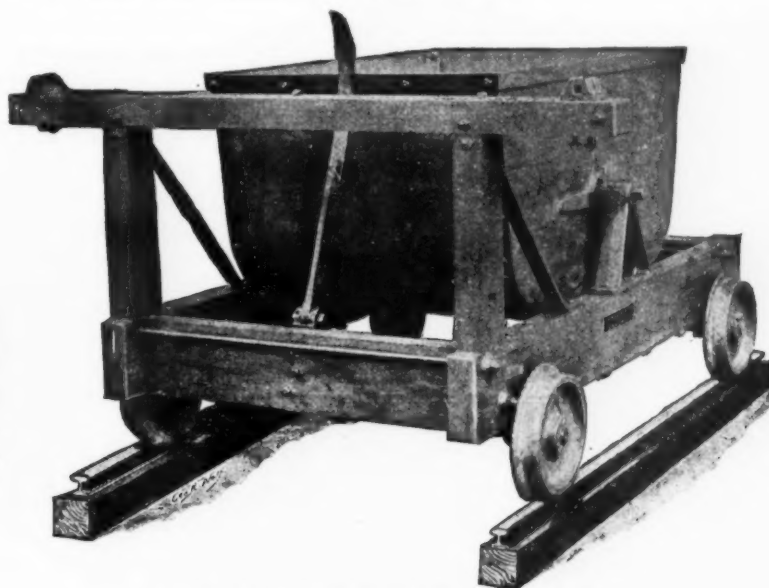
Didn't You Know It? Use of Improved Machinery Reduces the Cost of Manufacture!

Our Machines are Simple in Construction, Durable and Powerful.
Will Guarantee them under any and all circumstances.

Let us make you a trial order for one of our machines.
The price will astonish and please you.



IMPROVED PLASTER AND ROCK CRUSHER
For crushing Plaster, Phosphate Rock, Bone and other Fertilizer Materials.



STANDARD END-DUMP MIXER CAR
For carrying off and discharging the product from a Mixer, or for any purpose where Dump Cars are used. Hand or Automatic operation.

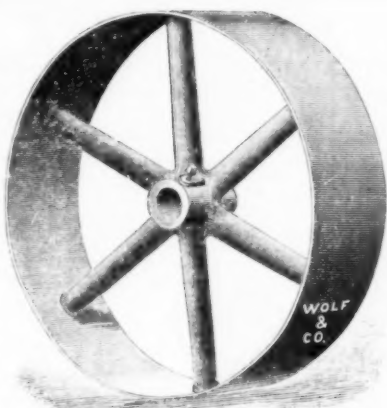
WALKER & ELLIOTT,

Manufacturers of Fertilizer and Phosphate
Mill, Crushing and Grinding
Machinery.

Write for Catalogue and Bargain Prices.

WILMINGTON, DEL.

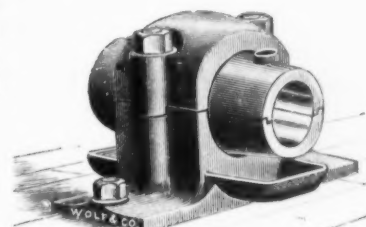
Economical Transmission of Power.



We are thoroughly equipped to fill orders of any magnitude from a Single Hanger, Pulley or Gear Wheel to an entire Carload at short notice. Our foundry has a melting capacity of 60,000 pounds a day, and in our machine shops we have installed the most improved machines.

SEND FOR CATALOGUE.

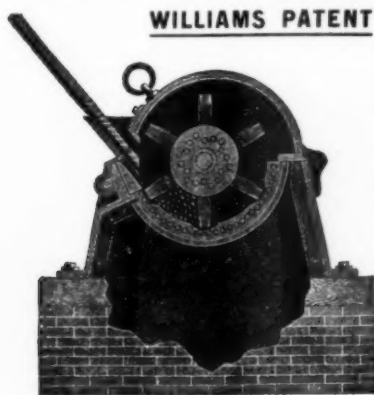
**Pulleys, Gearing, Hangers, Mitre Wheels,
Link Belt Attachments, Countershafts,
Belting, Belt Tighteners, Belt Fasteners.**



Ball and Socket Pillow Block.

Contractors for Complete Power Plants. Manufacturers of Flour and Corn Mill Machinery.

THE WOLF CO., Chambersburg, Pa.



WILLIAMS PATENT

**Oil Cake Combination
Breaker and Grinder.**

More and Better Work with Less
Power and One-quarter the Cost for
Repairs than any other mill.

We make a speciality of Mills for Grinding
Phosphate Rock, Bones, Coal, Tan Bark, Clay, &c.

REFERENCES ON APPLICATION.

Williams Patent Crusher & Pulverizer Co.

2701 N. Broadway, ST. LOUIS, MO.

Eastern Representative—GEO. W. ROSTON,
Fidelity Building, Philadelphia.

H. C. LARRABEE.

JNO. C. MURPHY

CAROLINE IRON WORKS,

Corner Caroline and Lancaster Streets,

BALTIMORE, MD.

**PLASTER
BREAKERS**

Write
for
Prices.

SMELTING POTS

For Shot and
Sheet Lead Works.

When in need of **LEAD PIPE OR SHEET LEAD**

For Sulphuric Acid Chambers

Send your orders to The JAMES ROBERTSON MANUFACTURING CO., Baltimore, Md.

PERFORATED SHEET METALS

For All Manufacturing Purposes.

MUNDT & SONS,

88 and 90 Walker Street,

NEW YORK.

Charleston, S.C. Has \$10,000,000 Now Invested in Manufactures in Active Operation and Wants Manufacturers to Locate Here. **New Manufacturing Enterprises Exempt from Taxation for Five Years.**
The most successful market farming region in the United States. Harbor is large and deep enough to float the combined navies of the world. 28 feet depth of water to ocean. Perfect Climate, Good Health, Cheap Living. Address for information, Bureau of Freight and Transportation.

Don't be misled

into supposing that cast or malleable iron valve motions are good enough, just because you are told so by the manufacturers of cheap steam pumps. Henry R. Worthington used these materials until last year, but finding that the present day requirements made the use of the best material necessary, began fitting all Worthington Pumps with forged steel valve motions and links. While they cost more, the expense is worth the difference. That is the opinion of engineers of experience throughout the world.

HENRY R. WORTHINGTON, New York.

Boston.

Chicago.

St. Louis.

Pittsburg.

Philadelphia.

Cleveland.

Atlanta.

New Orleans.



— THE LEADING HOUSE. —

H. WM. DOPP & SON,

MANUFACTURERS OF

Soap Makers' and Butchers' Machinery,

462 ELLICOTT STREET, BUFFALO, N. Y., U. S. A.

Swing Foot Lever Soap Presses, Nos. 1 and 2. Combination Foot and Steam Power Soap Presses. Improved Soap Remelting Catchers, either with or without Eight Horse-power Engine attached. Seamless Steam Jacket Kettles. Steamed Jacketed Toilet Soap Kettle, with Agitator (three different styles). Steam Jacketed Rendering and Refining Kettles. Steam Jacketed Kettles for Confectioners. Illustrated and Descriptive Catalogue on application.

Improved Lard Dryer, Mixer and Cooler. Steam Jacketed Vacuum Pans. Hotel Kettles for Boiling and Steaming in Hospitals, Institutes, Barracks, Hotels, Asylums, &c., &c. Steam Jacketed Glue Pot Heaters. Iron Soap Cutting Frames, with Adjustable Wires. Soap Dies for Stamping and Moulding the Soap. Hand Stamps, Steam Traps, with Balanced Valve, &c.

Mention this advertisement.



JOHN T. BAILEY & CO.

Philadelphia, Pa.

Offices and Works—Water & Tasker Sts.

Manufacturers of

BAGS, ROPE and TWINE.

IMPORTERS OF

BURLAPS.



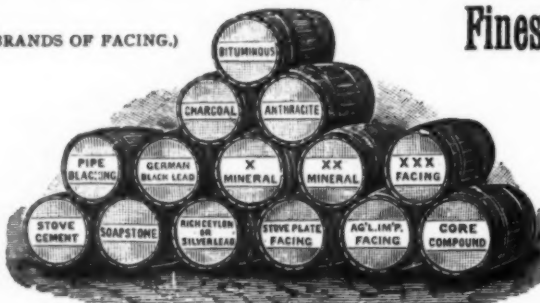
MANUFACTURERS

Wire Brushes, Bristle Brushes,
Iron, Brass and Steel Riddles,
Bellevs, Sifting Machines,
Chaplets, flined and plain,
Moulders' Cast Steel Shovels,
Geared and Hand Ladies in Stock.

FOUNDRY EQUIPMENTS.

(A FEW BRANDS OF FACING.)

ASK FOR
ANY
SUPPLIES
YOU
WANT.



Finest Stove-Plate Facings.

FIRE-PROOF and RETURN FACING.

CHARCOAL, SOAPSTONE, ANTHRACITE, PLUMBAGO,
SEACCOAL and MACHINE.

J. W. PAXSON CO.

1021 N. Delaware Avenue,

PHILADELPHIA, PA.



APOLLO BEST BLOOM
GALVANIZED IRON

A builder can skin on galvanized iron in two ways: (1) use a cheap make; (2) buy it thin.

Cheap makers roll and stencil to order.

Apollo Iron and Steel Company,
Pittsburgh, Pa.

MORSE TWIST DRILL AND MACHINE CO.

NEW BEDFORD, MASS., U. S. A.

Manufacturers of

Twist Drills, Chucks, Reamers, Milling Cutters, Taps and Dies, and Machinists' Tools.

Send for Our 1898 Catalogue.



Angular Cutters.

"He that knows, and knows that he knows, is wise. Follow him."—Arabian Pr.

The American Balance Slide Valve

BEVEL PACKING RING

ABSOLUTELY STEAM TIGHT.

NO SPRINGS.

SELF-SUPPORTING. SELF-ADJUSTING.

15,000 Valves in use on Locomotives, Stationary and Marine Engines.

Descriptive Catalogue Free.

AMERICAN BALANCE SLIDE VALVE CO.,
Jersey Shore, Penna.

"SAMSON" STEEL BELT HOOK.

SAMPLE SENT FREE.

For all kinds of Belts—leather, cotton or rubber. Will neither cut nor pull out. FLEXIBLE, SMOOTH and NOISELESS RUNNING.

THE BEST FASTENER FOR OLD BELTS.

Samson Steel Belt Hook Co.

221 Locust Street,
Philadelphia, Pa.



THE HOLLAND BOAT.

Compressed Air is the life of the Holland Submarine Torpedo Boat. By an INGERSOLL-SERGEANT Class "E" single acting Compound Air Compressor, air is compressed up to 2500 pounds pressure, and is used for Emptying the Water Ballast Tanks. Driving the Horizontal Steering Engines. Driving the Engines controlling the Diving Gear. Ventilating. Respiration. And other purposes. The details of which have startled the world.

THE Ingersoll-Sergeant Drill Co.

HAVEMEYER BUILDING, 26 CORTLANDT ST., N. Y.

VALDOSTA FOUNDRY & MACHINE CO., VALDOSTA, GA.

Manufacturers of Boilers, Saw Mills, &c.

We Buy, Sell and Trade New and Second-hand Machinery.

MANUFACTURERS' RECORD.

A WEEKLY SOUTHERN INDUSTRIAL, RAILROAD AND FINANCIAL NEWSPAPER.

VOL. XXXIII. No. 19.
WEEKLY.

BALTIMORE, JUNE 3, 1898.

\$4.00 A YEAR.
SINGLE COPIES, 10 CENTS.

Manufacturers' Record.

PUBLISHED EVERY FRIDAY BY THE
Manufacturers' Record Publishing Co.
RICHARD H. EDMONDS, President.
OFFICE: MANUFACTURERS' RECORD BUILDING,
BALTIMORE.

RICHARD H. EDMONDS,
Editor and General Manager.

THOMAS P. GRASTY,
General Staff Correspondent.

NEW ENGLAND OFFICE:
Room 14, 299 Devonshire Street, Boston, Mass.
S. I. CARPENTER, Manager.

Special Traveling Representatives:
RICHARD S. EVANS,
I. S. FIELD.

SUBSCRIPTION, - - - \$4.00 a Year.
TO FOREIGN COUNTRIES, - - - 5s. 6d. a Year.

BALTIMORE, JUNE 3, 1898.

Railroads as Developers.

At a recent conference of representatives of the departments of industry and immigration and passenger departments of the railroads in Tennessee a committee consisting of Col. J. B. Killebrew, immigration agent of the Nashville, Chattanooga & St. Louis Railway; Col. Robert Gates, industrial agent of the Louisville & Nashville Railway, and Mr. M. V. Richards, land and industrial agent of the Southern Railway, was appointed to prepare an address to the people of the State demonstrating the interest of the railroads in the resources and possibilities of Tennessee and inviting the people to a cordial and liberal co-operation with the companies in an effort to develop the mineral, forest, field, garden and orchard wealth. In the address some salient facts are set forth. It is pointed out that the prosperity of the railroads is bound up in the prosperity of the people and vice versa. In these days of advancement in many directions no community, however rich in natural resources, can long maintain its prosperity or extend it with any great interest oppressed or crippled. The healthful development of a community depends upon the growth of its agriculture, manufactures and commerce.

The agents in this growth, perhaps the most powerful agents, are the railroads. Born of farming operations, mining and industrial undertakings, the railroads, under favoring conditions, rapidly become the nurturers of their parents, and the interdependence of all the interests becomes greater with their expansion. The committee says:

It will surprise many to learn that the railroads of Tennessee are now expending annually between \$20,000 and \$40,000 to attract immigrants and capital to its borders. Some of this capital is being invested in manufactories, mining and lumbering, and a part in a more diversified agriculture. A few railroad farms have been established in order to demonstrate the wonderful powers of our soil and climate in the growth of vegetable products. These farms are conducted not for profit, but in the interest of the people of the State, who may learn from their management how to increase the quality and quantity of those products that

may be grown with profit. These farms also point out what may not be grown profitably, thus teaching both positively and negatively lessons of the greatest benefit to our farmers. If such an object-lesson becomes the means of encouraging the growth of valuable products on the line of the roads, it will prove a profitable investment, not only for the railroads that bear all the expense, but to the farmers of the whole State. Agents are also employed to visit other sections and induce the growers of high-priced products to settle in the State and engage in these new branches of agricultural development.

This publication of the committee, clearly showing how deeply impressed the railroads are with the vast and varied riches of Tennessee and with the necessity of developing them, should have a healthful effect not only upon Tennessee, but upon other States of the South to which the arguments of the committee are applicable.

A Danger and How to Avoid It.

Following the line of policy suggested by the Manufacturers' Record, that this war would compel our country to build a large navy, to construct the Nicaraguan canal and to establish coaling stations in the Pacific and the Gulf and to broaden its policy as to foreign affairs, the Denver Republican says:

It is improbable that Great Britain and the United States will ever become involved in war with each other. The proposed American navy would probably never be used against the fleets of the British empire. But there has been talk of European action against the United States, in which possibly all the great nations of the Continent would participate. It is against such a contingency that the American people should provide. It cannot be done without building a more powerful navy than that of France.

With some countries this would be impracticable, because of lack of money. But the United States is so rich that it could build a hundred battleships and an aggregate of two hundred cruisers, gunboats and harbor-defence boats without placing a heavy burden of taxation on the people. To build these ships, together with a correspondingly great fleet of torpedo-boats and torpedo-boat destroyers, would not cost more than \$300,000,000. That is a large sum of money, but distributed over a period of ten years, it would involve an expenditure of only \$30,000,000 per year. This would not involve a burdensome increase in taxation.

A fleet of this size, added to the ships now in commission or under construction, would make the United States stronger on the seas than Great Britain is today. It would put an end to all talk about a European coalition against this country. Great Britain would be our friend, and the two powers together could rule the world. Refrain from building such a navy, and the United States may be compelled to sue for peace at the feet of the allied powers of the Continent.

A Good Habit.

Mr. George C. Smith, of Atlanta, president and general manager of the Atlanta & West Point and Western Railway of Alabama, like many other men who are at the head of transportation systems, is an extremely busy official, but is never too busy to find time to read the Manufacturers' Record. In a recent letter he writes as follows:

I make a practice to read the weekly issues of the Manufacturers' Record, and have never failed to find profit and instruction therein.

OUT OF EVIL GOOD MAY COME.

It must have been a providential protection to this country that, living in fancied security and yet almost helpless in a sudden emergency, we have not had to face a war with any first-class power. Though we could eventually, after years of struggle, have won a contest with any power in the world, yet had we got into trouble with Great Britain, for instance, over the Venezuelan matter, she could have bombarded and destroyed every city on our coast from Portland to Galveston and rushed two or three hundred thousand troops into the very heart of our country before we were ready to strike a single blow in self-defence. Such a war, even from a financial view only, ignoring the destruction of our prestige and power, would have cost us far more than the total cost to North and South of the civil war. Our boastful congressmen, ever ready to "twist the lion's tail," and the millions of our people who have vainly imagined that we could, as many have expressed it, "whip all creation," and that we needed not to be forearmed, would have learned a lesson of the helplessness of a great giant unprepared for fight such as history has no record of. In a contest with Great Britain we would have been just as helpless for a year, at least, as was China in the hands of Japan. Moreover, with the slight fortifications that we then had battered down, our shipyards destroyed, neutrality laws making it impossible for us to purchase abroad, even if ships had been for sale, our country would have been sadly crippled and certainly retarded half a century in its progress. No thoughtful man can say that this is an overstatement. It was a danger that we daily faced for twenty-five years or more, until Spain, a bankrupt country of hardly one-fifth our population, with the smallest navy of any important maritime country, has suddenly awakened us to a realization of the fool's paradise in which we have been living.

We have prated of our safety from attack, of our ability to devise weapons of defence; we have said that in a week we could rush an army of half a million into Canada—and, behold, after three months of tremendous straining, of unlimited expenditure, we have scarcely 100,000 soldiers fully equipped and ready for battle. The men have crowded to volunteer, but there were not enough guns nor ammunition in the whole country to supply even a beggarly army of a hundred thousand.

Great Britain, or Germany, or France could have landed from 250,000 to 500,000 trained, disciplined, armed soldiers upon our coast within one month from the declaration of war. Where would we have been then? A giant nation temporarily prostrate, because our enemy was prepared. France learned this lesson in 1871 at the expense of national honor and of several billions of money, one billion alone having been paid to victorious Germany.

Vainly have we deluded ourselves that we were safe and needed not a great navy, a moderate army and coast defences. The great democrat Samuel J. Tilden years ago tried to make the country see the dangers ahead and to induce his party to take the lead in protecting our coasts and building a navy. But costly experience seemed to be needed to awaken our people, and so we find that the war with a fifth-rate power has shown how narrow is the margin of safety. This war, even if no other country becomes involved, will certainly cost us over \$500,000,000, and more than likely \$1,000,000,000—in either case enough to have built and manned such a navy as would have made the very suggestion of Spain's attempting to resist any demands of ours utterly out of the question.

For the politicians who forced us into a war for which we were not prepared, and especially for those who are seeking to hamper the government in its finances, now that war is upon us, there will be a day of reckoning, but the duty of the public just now is to give the utmost support to the government, and instead of deploring the dark side, look beyond to the good that will come in the end.

We have now entered a new era. Dangers of many kinds surround us. We must now take a new position in the world's affairs, and it is folly to say that we can now draw back into our quiet life again. We are in the world, and we can no more get out of it than the human being once brought into life can get out of existence. It behooves us, therefore, to quit ourselves like men, to meet the responsibility that is upon us, and to prepare to make the best of the situation. To do this we must for the next few years, in building a navy that will make us respected and our power dreaded by every nation of the world, tax to their utmost capacity every shipyard in this country. It is a trite saying that the best assurance of peace is a preparedness for war. The expenditure within the next few years and as rapidly as possible of \$250,000,000 to \$500,000,000 in building a navy will be the cheapest guarantee of peace and safety that we can possibly find. As we enter this new period of naval-building activity, of maritime expansion and of the broadening of our foreign trade we shall find some compensations for present troubles, for we shall then, when the war is ended, have entered a period of business activity and expansion rivaling that which this country enjoyed during the time when the mighty empire of the West was being created by the building of railroads, the development of cities and the opening up of a new agricultural world.

Improvement in Cotton Handling.

The Manufacturers' Record notes with much interest the efforts of the cotton-compress people to bring about better baling, even though self-preservation is the inspiring motive of the work. When the round-bale system was first introduced the Manufacturers' Record commended the plan and said that the very effort to introduce something new in baling would force the better baling of the entire cotton crop, and that, though little or no improvement had been made for a century, self-interest would compel the compress-owners to try to save themselves by adopting some improvements. This is now being fulfilled, and the South is to be congratulated that its cotton will be better baled than ever before—a condition due to the work of the round-bale people, and it is to them that the South is indebted for this advance. But the compress people are not going far enough. They are attempting merely to improve an antiquated system, instead of devising or adopting some radically new system that would meet the demands of the day. It is inevitable that the old methods by which middlemen live on the handling of any staple between the producer and the consumer are to be changed and that the number of middlemen will be decreased, to the profit of the grower and the consumer. In the cotton business the old compress companies, many of which are partly controlled by the railroads, must give way to some method by which cotton will be compressed at the gin, for in this day of close economies double handling of such a staple, with all its attendant charges, is sure to be abandoned. If the compress people want to meet the situation, they must enter the field with some system that compresses the cotton where it is ginned, and then, and not till then, they can justly claim the consideration of cotton growers. For years they have fattened on the growers, and it is time for them and for the railroads to recognize that the whole cotton-handling business is undergoing a revolution as complete as any great industry in this country ever passed through.

The South's Export Trade.

Though the fiscal year does not end until June 30, it is not too early to make a preliminary survey of the Southern export business of the year in comparison with that of other parts of the country. In fact, because of the unusual manifestations of the past two months, a comparison based upon the normal conditions may be made for the nine months ended March 31, rather than for the whole year, as indicating the tendency of the South in this connection. It should be remembered that the figures for 1897 showed a very considerable advance by the South. Just after the fiscal year of 1897 closed some of the far Southern ports were threatened by yellow fever, and that fact must be considered in forming an estimate of the progress made there since last summer. The totals of the values of exports by sections are on their face not as favorable to the South as they were last year. They are as follows:

Ports.	1897.	1898.	Increase.	Gain Per cent.
North Atlantic.....	\$411,629,090	\$453,113,687	\$41,484,588	10
South Atlantic.....	147,906,157	178,800,901	30,894,744	20
Gulf.....	165,356,765	176,670,598	11,313,833	6
Others.....	97,388,439	177,408,432	80,019,993	20
Total.....	\$822,280,400	\$925,993,618	\$103,713,158	12
All Southern.....	\$313,262,922	\$355,471,499	\$42,208,577	13
All others.....	509,017,538	570,522,119	61,504,581	12

It will be seen in this table that the total increase in the whole country for nine months was \$103,713,158, or 12 per cent. The increase at all Southern ports was \$42,208,577, or 13 per cent., and at all other ports \$61,504,581, or 12 per cent. The greatest increase percentage was 20, at the South Atlantic ports and at the Pacific, Northern border, lake ports and interior points. The North Atlantic ports had an increase of \$41,484,588, or only 10 per cent., while that at the Gulf ports was \$11,313,833, or 6 per cent. The comparison of the Southern ports for the two periods is given in the following table:

Ports.	1897.	1898.
Baltimore.....	\$66,655,456	\$87,394,298
Beaufort.....	2,856,915	2,405,663
Brunswick.....	5,608,086	8,723,588
Charleston.....	10,469,280	10,694,507
Fernandina.....	816,769	1,223,692
Georgetown, S. C.....	1,591	251
Newport News.....	17,158,421	22,163,478
Norfolk.....	15,953,942	10,912,441
Panama.....	1,594	2,993
Richmond.....	2,426	4,000
St. Augustine.....	80,275	100,956
St. John's, Fla.....	26,237	36,438
St. Mary's, Ga.....	20,396,993	25,417,343
Savannah.....	7,877,892	9,271,173
Wilmington.....	246,376	239,714
Apalachicola.....	149,593	151,411
Brazos de Santiago.....	4,119,241	3,307,694
Corpus Christi.....	54,246,664	62,711,103
Galveston.....	287,045	517,454
Key West.....	8,438,995	7,788,449
Mobile.....	84,794,937	89,171,885
New Orleans.....	4,055,914	3,114,587
Paso del Norte.....	863,062	960,124
Pearl River, Miss.....	6,396,887	6,816,448
Pensacola.....	1,161,977	1,386,800
Saluria, Texas.....	656,829	482,072
Tampa.....	775	1,857
Teche, La.....	775	1,857
Total.....	\$313,262,922	\$355,471,499

This shows decreases at nine ports, five of which are on the Gulf, but these decreases were not sufficient to bring the total for all the Southern ports below the average. So much for surface indications. A scrutiny of the figures at the Gulf ports particularly will explain the apparent tendency to a falling off of exports as compared with the rest of the country. This tendency is only apparent, however. It is a matter of values rather than quantities, and it is explained almost entirely by the figures for exports of cotton, as follows:

Ports.	1897.	1898.
Baltimore.....	138,417	169,363
Beaufort, S. C.....	63,850	65,834
Brunswick, Ga.....	165,909	212,552
Charleston.....	261,579	299,002
Newport News.....	10,505	14,544
Norfolk.....	185,426	81,973
Savannah.....	401,339	674,087
Wilmington.....	200,234	284,553
Apalachicola.....	12,785	15,078
Corpus Christi.....	1,152,313	1,420,144
Galveston.....	158,237	197,719
Mobile.....	1,963,246	1,896,979
New Orleans.....	100	3,613
Paso del Norte.....	64,856	105,108
Pensacola.....	7,632	5,785
Saluria.....	4,426,028	5,441,612
Total South.....	4,426,028	5,441,612
Total.....	5,215,716	6,359,950

In this table the figures are for the seven months of the season beginning September 1, but that will not interfere materially in the general results. It will be noted that because of the decrease in the price of cotton per pound in 1897-98 over that in 1896-97, while the exports of cotton in the country increased 1,144,234 bales, the value of the exports of cotton is \$3,174,536 less. The exports at Southern ports increased from 4,426,028 bales to 5,441,612, or 1,015,584 bales, while the values decreased from \$163,825,167 to \$161,550,380, or \$2,274,787. At other ports the exports of cotton increased from 789,688 to 918,338, or 128,650 bales, while the decrease in price was from \$31,368,300 to \$30,468,560, or \$899,749. The value of the exports of cotton for seven months was more than half of the value

of all Southern exports for nine months, and it may be understood, therefore, what an important item in fixing the general percentage has been the fall in the price of cotton. Another way of looking at it is in estimating the total value of the exports of cotton if it had brought the same price as that obtained in 1896-97. The average price per bale during that period was \$37.42. At that price the value of total cotton exports this year would have been \$237,989,329, while the total value of those at Southern ports would have been \$203,625,121, or \$42,074,741 more than was obtained. That added to the total would have brought the exports from the Gulf far beyond the average percentage of increase in the country. In the meantime, however, the difference in cotton values at other ports, \$3,895,648, was hardly enough to affect the general total there one way or another. However, there was some compensation for the Southern ports in the increased value of the breadstuff exports, shown as follows:

Ports.	1897.	1898.
Baltimore.....	\$24,642,726	\$29,655,342
Newport News.....	9,339,782	14,110,871
Norfolk.....	4,629,711	4,564,303
Galveston.....	4,200,598	11,211,910
Mobile.....	1,180,305	850,173
New Orleans.....	11,029,333	21,131,983
Total South.....	\$55,052,365	\$91,834,582
Total elsewhere.....	98,753,324	138,058,556

The quantities of corn exported decreased at all the Gulf ports and at Baltimore and Norfolk, and increased at nearly all the other ports. There was a large increase in quantities of rye at Baltimore, Newport News, Galveston and New Orleans, and a large increase in quantities of wheat at Baltimore, Newport News, Norfolk, Galveston and New Orleans, and a falling off in quantities at Boston, Mobile, San Francisco and Duluth. The exports of wheat at New York in the nine months were 19,117,157 bushels, and at New Orleans 13,394,036 bushels. The increase in quantities of wheat at Southern ports more than balanced the decrease in

Value.	Bales.	Value.
\$5,051,657	169,363	\$4,784,810
2,464,373	65,834	2,159,451
3,717,361	212,552	6,243,139
10,291,470	299,002	9,577,195
385,849	14,544	461,743
6,425,896	81,973	2,300,329
14,991,782	674,087	20,291,571
7,426,273	284,553	8,898,137
560,782	15,078	520,863
44,455,079	1,420,144	43,899,305
5,572,076	197,719	5,453,544
59,934,297	1,896,979	53,859,153
3,613	100	3,061,346
2,314,630	105,108	189,771
320,092	5,785	
\$163,825,167	5,441,612	\$161,550,380
\$195,193,476	6,359,950	\$192,018,940

corn, and as a whole the Southern ports have made a good showing in the matter of breadstuff exports. The total values have decreased only at Norfolk and Mobile, and the increase at the Southern ports of \$36,782,217 is equal to 66 per cent., while that at the other ports of \$39,305,232 is equal to only 39 per cent. of the total at all ports. The proportionate advantage thus gained by the other ports is less than that gained at Southern ports. Taken as a whole, the position gained by Southern ports is the most encouraging kind.

Machinery the Arbiter.

The Textile World, in an article dealing with the condition of cotton machinery in Northern mills, says that the spinning machinery there is first-class, nearly all the mills having been equipped with modern spindles and the carding department having been modified in the adoption of recent improvements as rapidly as could reasonably be effected, but it adds:

The recent advances made in weaving have been so radical of late that many mills have

been unable to keep up with them, while the new mills of the South have been in a position to take advantage of them, which, with favorable labor laws, has enabled the latter to compete with the Northern mills greatly to their disadvantage.

Here is another contribution to the real explanation of the condition of Northern mills as compared with those in the South. Too little heed is often given by superficial observers of economic conditions to the importance of machinery in determining the progress made by an undertaking. It is a little curious that this fact should have to be reiterated for the benefit of New Englanders, but its reiteration is constantly supplying incentives to Southern mills to maintain their policy of keeping abreast of the improvements in cotton machinery.

In Spite of War.

Ever since the outbreak of the hostilities with Spain the Macon Telegraph has been persistent in its hopefulness and steady in its encouragement of the maintenance of all the activities of the community that contribute to its progress. In a recent editorial it showed that the bank clearances of the city for the first four months of the year had reached \$10,816,000, a gain of 18.6 per cent. over the same period in 1897, and it says:

We have only to persist in attending to our own affairs and holding together in a common cause to obtain our full share of the good things of this earth. There is not one city in the South which has brighter prospects than Macon, situated as it is in the very heart of Georgia and enjoying as it does such extraordinary transportation facilities.

This is according to the advice of the Telegraph that the people should not permit their minds to be diverted from their usual duties, but should lay their plans of business as though nothing serious was about to happen and to continue buying and selling, investing and promoting, working and contriving. Such advice is in line with that of the Manufacturers' Record, that in war the South should be preparing for peace. The good effects of such a policy appear in the presentation of the conditions at Macon, and if it is persisted in throughout the South, the end of the war will find that section in a most satisfactory condition.

An esteemed correspondent, writing to the Manufacturers' Record about the flag that appears in these days on all its envelopes, says:

In sorrow (not in anger) I notice that the Stars and Stripes on your envelope is marred by a deficiency of stripes and an alarming increase of stars.

As each star signifies a State, it is quite evident that you are an annexationist of the worst type and have included Hawaii, Cuba, Porto Rico, the Philippines, and, for all I know, Canada and Europe. But, in a manner characteristic of these jingoes, you have belittled our original thirteen and only count them eleven.

We, the people, hereby beg to notify you that this defiance of popular will and tradition cannot be allowed to go unpunished, and after we get through with Spain, we will have to take you in hand.

That is all right. Our flag designer was only a little premature, for when the war is over we will have the stars and Spain the stripes.

Secretary Tom Richardson, of the Houston Business League, has been on a visit to Omaha, Neb., in the interest of the Texas coast country's representation at the Transmississippi Exposition of this summer. He has not lost sight of his advocacy of Houston, and is doing considerable talking for that city in the Northwestern State.

CONVINCED THE GINNERS.

Successful Test of the New Round-Bale Press at Waco, Texas.

[Special Cor. Manufacturers' Record.]
Waco, Texas, May 28.

For three days of the past week the American Cotton Co. has been making at its Waco (Texas) plant a most thorough and severe test and exhibit of its 35-inch round-bale press, which makes the new 275-pound "half bale." The construction of this press and the making of this bale is in response to the demands of a very large proportion of the European spinners, who united in urging upon the American Cotton Co. that it make a bale that was of the proper length to unroll direct into their 36-inch openers without any foldings and without ever having to be touched by hand. Such great economies to the mills have developed in using the round bales of the American Cotton Co. that the European spinners particularly are making preparations to use them extensively. The company's representatives say that not only have they practically sold out all this past season's output, but that they are having to refuse a great many offers from day to day, and that the demand for delivery in next crop is becoming heavy. On the same authority it is stated that the American Cotton Co. is already practically assured of the promptest sale of every bale that it can have put up next season on all the presses it can turn out.

It is now working night and day at its Chicago works, having over 200 men on the presses alone. It is trying to have 250 presses in operation the coming season. The company has had its representatives actively engaged for the past two weeks throughout Texas and Indian Territory arranging for the leasing of its presses to the best ginner in good cotton locations. These agents have generally urged upon the ginner to go to Waco and for themselves see the machinery in operation, make every sort of personal investigation and test, examine the bales, unroll, sample, measure and in every way convince themselves that every statement made relative to press and bale was absolutely correct, and that the methods of the company were fair and just and on a basis of assured securing of a very large proportion of the savings to the farmer and ginner.

The American Cotton Co. had carried over seed cotton to make about 300 bales at its Waco plant.

A large number of the more prominent ginner from various sections visited the plant during the three days' run. Every possible facility was given them to make the fullest examination and test of everything. Hour after hour the press ran; bale after bale was turned out, ranging about 275 pounds for the "half bales," in accordance with the almost universal request of the spinners for a "250-pound bale;" all the simplicity and economy of the new method were clearly shown; all the absurd claims and statements of those opposed to the new method were entirely controverted by the actual facts presented, and every man was convinced beyond all question. The sampling in making and after making, examination, etc., were all demonstrated. To prove the complete unrolling, a bale was made, covered, and was ready for shipment, when it was lifted up on top of the press, cover removed, and then it was unrolled back into the press and rolled up again in inverse order. Every man present said that that "settled the unrolling for good and for keeps." A number of ginner took home sections of a bale, as some of them said "to knock out those who said anything against it."

The bales as made right along in regular course ranged thirty-six to thirty-nine pounds and over in density per cubic foot. The results were most gratifying to the company in the effects upon the ginner, and there is no question that every press that the company can put up in time for the early South Texas crop will be taken by the best ginner in that splendid cotton district.

A. R. McCOLLUM.

Industrial News from Birmingham.

[Special Cor. Manufacturers' Record.]
Birmingham, Ala., May 31.

It's a difficult matter to diagnose the market satisfactorily. Shipments are free, but they represent past orders. Current business was rather light the past week. To some interests inquiries were very fair, but resulting transactions were not in proportion. Quotations are continued on a basis of \$7.25 for No. 2 foundry, and, so far as is known, they are maintained. There are no complaints of cutting values by any of the interests. Warrant iron has been very quiet, transactions being very few. There continues to be a good movement out of the yards. The export trade was quiet. Some room was offered for small lots and taken, but the aggregate placed was of no moment. Take it all around the market was very quiet, in keeping with the torridity of the weather. There are no new features to chronicle concerning the steel mill, and while the progress of the negotiations has been duly reported, it should be remembered that they yet lack official announcement of a successful ending. At the rolling mills the scale of wages has been practically decided upon and will remain unchanged. There are some mutterings concerning miners' wages in this district which will be discussed here at the annual meeting soon to be held. That element given to agitation will demand an increase of wages and a standard for government of the price other than the price of iron. No one can tell in advance what will be the outcome. There have been some transactions in coal lands and some contracts for delivery of coal at Gulf ports, one being for 1000 tons per day for a limited period. The supposition is that this coal is for the fleet of vessels assembled in the Gulf.

The minor industries report no new business of moment, and in some lines there was a hold-up of fresh orders. But there is enough on hand to keep things lively with them for some time.

In real estate transactions are fair. The Roman Catholics are negotiating for a lot on which to build a hospital to be under the management of their orders. It will have all the modern improvements that medical experience approves and will involve an expenditure of \$30,000 or more. Other improvements heretofore mentioned are being pushed to completion. Their aggregate absorbs a considerable amount of money.

J. M. K.

Reported as Sold.

According to a dispatch from Knoxville, Tenn., it is again reported that the English parties who are said to be negotiating for coal property in Tennessee and Kentucky have completed arrangements, and that it is to change hands. It is stated that the transaction was negotiated through the Anglo-Indian Banking Co., of London. The mines involved, it is claimed, have a total daily capacity of 10,000 tons and give employment to 4000 men.

The annual report of the city treasurer of Charleston, S. C., shows that the credit of the city was maintained during the past year. The city debt has been reduced to the extent of \$20,000.

MINERAL PRODUCTION OF THE UNITED STATES IN 1897.

The Manufacturers' Record is able to present the following statistics of mineral production for 1897 and 1896 from advance reports of "The Mineral Industry, Vol. VI," by Richard P. Rothwell, editor of the Engineering and Mining Journal:

Number.	Products.	Customary Measures.	1896.				1897.			
			Quantity.		Value at Place of Production.		Quantity.		Value at Place of Production.	
			Customary Measures.	Metric Tons.	Totals.	Per M. Ton.	Customary Measures.	Metric Tons.	Totals.	Per M. Ton.
NON-METALLIC.										
1	Abrasive	Sh. T.	505	539	\$365,612	\$80.68	621	569	\$153,812	\$80.27
2	Carborundum	Sh. T.	250	227	35,000	154.19	239	209	32,300	154.07
3	Crushed steel	Sh. T.	236	220	50,024	171.00	224	204	51,891	176.00
4	Diatom, earth	Sh. T.	3,540	3,211	34,300	10.65	3,000	2,721	30,400	11.17
5	Emery	Sh. T.	1,550	1,406	108,500	77.17	1,500	1,361	105,000	77.15
6	Garnet	Sh. T.	2,540	2,214	85,400	38.57	2,250	2,050	79,100	38.57
7	Grindstones	Sh. T.	31,301	28,396	294,338	10.36	36,651	33,250	366,675	11.00
8	Pumice	Sh. T.	Nil.	Nil.	16,500	3.04	1,700	1,542	8,500	5.51
9	Quartz crystal	Sh. T.	6,000	5,432	10,500	3.04	6,000	5,432	10,500	3.04
10	Trippoli	Sh. T.	1,405	1,275	4,823	3.79	1,631	1,479	5,475	3.70
11	Whetstones	Sh. T.	14,000	12,782	105,291	33.07	15,456	14,021	80,220	33.07
12	Alum.	Sh. T.	42,240	38,319	1,056,000	27.56	46,355	42,053	1,158,875	27.56
13	Ammonium sulphate	Sh. T.	257	233	10,280	15.46	3,111	2,822	124,440	15.46
14	Asbestos	Sh. T.	716	650	12,670	19.49	770	698	15,400	22.06
15	Asphalt	Sh. T.	20,414	18,519	362,500	19.58	27,307	24,854	466,620	19.58
16	Asphaltic limestone	Sh. T.	5,000	4,536	55,000	12.12	2,300	2,108	11,450	5.28
17	Bituminous sandstone	Sh. T.	51,956	47,134	132,500	2.81	41,185	37,363	125,555	3.36
18	Barytes	Sh. T.	21,900	19,867	87,000	4.43	27,316	24,781	109,254	4.41
19	Bauxite	L. T.	17,096	17,369	42,740	2.46	20,530	20,919	41,180	1.97
20	Borax (crude)	Sh. T.	13,320	12,084	266,400	22.04	17,509	17,509	398,000	22.05
21	Bromine	Lb.	559,285	253	143,074	70.57	487,149	221	136,402	70.62
22	Calcium carbide	Sh. T.	860	780	48,000	61.54	1,925	1,746	134,750	77.17
23	Cement, nat. hydrant	Bbls	7,407,311	1,007,980	4,385,962	4.35	7,781,377	1,038,883	4,127,124	3.90
24	Cement, Portland	Bbls	1,577,283	286,181	2,502,479	8.74	2,272,971	412,405	3,578,839	8.45
25	Cement, slag	Bbls	Nil.	Nil.	Nil.	Nil.	40,000	6,350	60,000	9.45
26	Chrome ore	Sh. T.	702	713	7,775	10.90	50	51	550	10.78
27	Clay products	Sh. T.	Nil.	Nil.	65,000,000	Nil.	Nil.	Nil.	690,000,000	Nil.
28	Coal, anthracite	Sh. T.	48,133,980	42,667,101	86,082,749	2.03	52,645,133	47,739,665	86,857,717	1.79
29	Coal, bituminous	Sh. T.	139,498,659	126,525,967	113,401,692	0.80	147,557,599	133,864,539	129,505,982	0.80
30	Coal, cannel	Sh. T.	54,661	49,588	146,491	2.95	56,511	51,267	153,145	2.98
31	Coke	Sh. T.	10,369,015	9,406,770	17,311,821	1.84	12,742,340	11,563,673	23,367,879	2.02
32	Cobalt oxide	Lb.	12,825	5,817	17,314	32.98	19,300	8,754	32,810	3.75
33	Copper	Sh. T.	11,170	10,133	52,662	5.19	11,924	10,818	56,565	5.23
34	Copper sulphate	Lb.	48,732,840	22,150	1,053,225	88.18	51,012,945	23,139	2,040,518	88.18
35	Feldspar	L. T.	24,907	25,305	124,351	4.91	20,900	21,234	113,773	5.36
36	Fluorspar	Sh. T.	6,000	5,432	48,000	8.83	6,025	5,467	74,456	9.09
37	Fullers earth	Sh. T.	11,326	10,373	68,476	6.06	17,049	15,467	91,634	5.93
38	Grauhalle (crude)	Sh. T.	1,282	1,163	38,460	33.07	1,756	1,592	52,680	33.09
39	Graphite, crystalline	Lb.	405,006	188,709	18,225	7.10	993,138	439,487	44,691	7.10
40	Graphite, amorphous	Sh. T.	574	520	3,850	7.40	1,300	1,090	11,460	10.45
41	Gypsum	Sh. T.	195,553	177,405	583,130	3.29	223,061	202,360	711,952	3.52
42	Iron ore	L. T.	16,000,056	16,256,057	31,300,880	1.93	18,316,967	18,610,038	31,138,844	1.97
43	Litharge	Sh. T.	6,500	5,897	540,300	91.57	9,000	8,081	809,100	100.11
44	Magnetite	Sh. T.	2,007	1,875	9,715	5.12	1,907	1,730	7,628	4.41
45	Manganese ore	L. T.	162,536	165,136	339,083	2.05	156,787	159,286	332,700	2.06
46	Mica, ground	Sh. T.	570	517	9,656	18.73	2,692	2,442	38,218	15.65
47	Mica, sheet	Lb.	17,639	7,907	12,528	1.57	92,335	41,883	45,615	1.09
48	Mineral wool	Sh. T.	5,853	5,309	61,614	11.60	5,667	5,141	45,944	8.81
49	Monazite	Lb.	17,500	8	875	109.37	40,000	18	2,000	111.11
50	Natural gas	Sh. T.	31,805	28,908	342,167	11.15	36,283	32,925	370,594	11.26
51	Paints, metallic	Sh. T.	17,835	16,179	178,793	11.05	11,151	10,116	110,165	10.89
52	Paints, other	Sh. T.	5,998	5,309	93,586	17.62	4,596	4,169	55,620	10.96
53	Paints, venetian red	Sh. T.	95,555	87,049	7,868,310	90.39	103,255	93,654	9,201,150	99.21
54	Paints, white, red	Sh. T.	15,800	14,391	1,180,735	82.67	26,392	23,825	2,100,960	83.18
55	Paints, zinc oxide	Sh. T.	15,863	14,391	1,180,735	82.67	26,392	23,825	2,100,960	83.18
56	Petroleum (crude)	Bbls	55,254,795	7,730,425	65,753,306	8.50	56,385,643	7,972,579	44,804,982	5.62
57	Phosphate rock	L. T.	937,372	952,370	2,812,116	2.95	906,080	920,577	2,718,240	2.95
58	Precious stones	Sh. T.	Nil.	Nil.	291,000	Nil.	Nil.	Nil.	101,000	Nil.
59	Pyrites	L. T.	109,282	111,630	292,626	2.63	128,408	130,523	379,699	2.83
60	Salt	Bbls	15,707,908	1,965,017	5,328,250	2.67	13,153,524	1,670,562	4,859,364	2.91
61	Silica, sand & quartz	L. T.	730,399	731,925	1,070,038	1.47	750,000	762,000	1,125,000	1.48
62	Slate, roofing	Sq. ft.	608,100	Nil.	2,260,862	3.73	895,372	Nil.	2,695,580	3.01
63	Slate, manufactures	Sh. T.	14,350	13,018	143,500	11.02	18,974	17,313	180,740	10.91
64	Soda, natural	Sh. T.	3,000	2,732	65,000	21.68	5,000	4,536	110,000	24.25
65	Soda, manufactured	M. T.	157,475	143,475	3,621,925	25.00	277,072	277,072	5,774,656	20.84
66	Stone, for building	L. T.	3,794,175	3,854,882	1,609,437	0.43	4,247,088	4,315,651	1,898,983	0.43
67	Strontium sulphate	Sh. T.	Nil.	Nil.	72,300	18.70	40	36	290	5.55
68	Sulphur	L. T.	3,800	3,861	72,300	18.70	1,090	1,717	34,814	20.27
69	Sulphuric acid	Sh. T.	1,019,501	924,885	17,331,517	18.74	1,128,741	1,023,387	21,446,079	19.19
70	Talc, common	Sh. T.	7,098	6,439	63,545	9.87	8,075	7,376	68,185	9.54
71	Talc, fibrous	Sh. T.	51,816	47,007	256,080	5.45	58,830	53,376	288,185	5.39
72	Uranium ore	Sh. T.	274	236	47,408	30.08	17	15	9,010	600.66
73	Zinc ore, exported	L. T.	2,324	2,361	47,408	30.08	9,251	9,309	211,350	22.48
74	Est. prod. unspecified	Sh. T.	Nil.	Nil.	5,000,000	Nil.	Nil.	Nil.	5,000,000	Nil.
Total non-metals					484,909,136				481,692,497	
METALS.										
75	Aluminum	Lb.	1,300,000	580,676	\$320,000	\$60.85	4,000,000	1,814,400	\$1,400,000	\$60.77
76	Antimony	Lb.	1,230,000	566	84,717	152.37	1,500,000	680	107,250	157.72
77	Copper (ore)	Lb.	479,806,180	217,639	51,003,397	234.35	510,190,719	231,421	56,325,055	243.39
78	Copper (refined)	Oz. f.	2,558,433	1,170,576	52,886,309	45.16	2,864,576	1,290,692	59,210,705	45.84
79	Gold	L. T.	8,623,127	8,761,007	91,577,610	10.45	9,652,690	9,807,123	92,677,312	9.45
80	Iron, pig	L. T.	Nil.	Nil.	20,25	Nil.	Nil.	Nil.	606	Nil.
81	Iridium	Oz.	174,792	158,470	10,411,643	54.07	197,718	179,368	11,784,083	65.73
82	Lead, value at N. Y.	Sh. T.	17,170	17,788	4,464	30.57	33,700	115,286	11,698	30.76
83	Nickel	Oz. f.	200	163	2,800	49.89	200	163	3,000	482.39
84	Platinum	Oz. f.	20,863	1,031	1,104,997	106.58	26,079	965	991,002	128.94
85	Quicksilver	Lb.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.
86	Silver, comm'l value	Oz. f.	58,488,810	1,819,208	39,245,992	21.58	56,457,292	1,756,004	38,755,815	19.22
87	Est. prod. unspecified	Sh. T.	77,637	70,432	6,117,706	86.80	100,887	91,070	8,271,889	90.83
Total metals					252,959,625				264,538,485	
Grand totals					737,868,761				746,230,982	

tion of a compromise. Although surrendering none of the principles which underlie a sound financial system, yet it recognizes silver as far as is possible without a surrender of those principles. It provides that there shall be no paper money issued in denominations under \$10 except silver certificates. In other words, all \$1, \$2 and \$5 notes, which constitute the actual popular circulating medium, shall represent silver.

Again, while meeting the views of those who regard the greenbacks as a stumbling-block to permanent prosperity, it does not ignore the prejudices, which with some reach the dignity of honest convictions, in favor of this kind of currency, for these notes, while they are to be retired as greenbacks, will be replaced in another form. Thus what the great financial world regards as a menace to our national credit will be removed without any contraction of the currency (so dreaded by a large and respectable element of our people), and without any issue of bonds, but by imposing the burden of their current redemption upon the banks in return for the privilege of issuing a certain amount of asset currency.

This measure, framed in a spirit of fair-mindedness, and looking honestly to the accomplishment of what its title indicates, "the strengthening of the public credit and the relief of the United States treasury," as well as the maintenance of abundant money and the mechanism for elasticity in time of stringency, the removal of the last shadow of doubt in the great financial centers of Christendom as to the soundness of our system, not ignoring even the prejudices of a large class among our own people (though at variance with the views of the framers of the measure), deserves the most patriotic and dispassionate consideration at the hands of the great American public, which, however it may ever and anon be swayed by impulse, yet in time always comes to consider what is truth and in fact will prove the greatest good to the greatest number.

"The bill," in the language of an eminent business man, who is likewise a conscientious student of finance, "seeks to maintain the parity of all moneys or currencies, to favor silver as the larger change or market money of the people, to create an issue and redemption division of the treasury, to put the burden of the current redemption of the greenbacks upon the national banks, to restrict reissue of greenbacks redeemed by the government except in exchange for gold, to provide for cancellation of greenbacks by use of idle gold already in the treasury, and to authorize a test beginning of the use of general credit currency by the national banks. The bill is politically the best measure that has been prepared." After reciting its consideration for the views of those favoring silver and greenbacks, this expert says in conclusion: "The bill is directly in the interest of the general public, of the farmer, the laboring man and the merchant. * * * Every advocate of change in our currency laws and every other citizen and business man who seeks safe and stable things in finance, should immediately recognize the vital importance of complete support of this measure. It is a great step forward."

Say what the politicians may, the fact remains that what the people want is prosperity. The rich man wants it so that his income may not be shrunk by failure of profits, stoppage of dividends; the toiler wants it so that he may have a steady living wage; the farmer wants it because it means demand, consumption and good prices for his crops.

THOMAS P. GRASTY.

Staunton, Va., May 30.

RAILROAD NEWS.

[A complete record of all new railroad building in the South will be found in the Construction Department.]

RAILWAYS IN THE SOUTHWEST.

Nearly 1200 Miles of Line Being Built by Six Companies Alone—Large Contracts Let.

Railroad building in the Southwest at present has caused general attention to be attracted to that section of the country. More important projects are actually under way in the section of the country between Rio Grande and Missouri river than perhaps in any part of the world, except Siberia. The Manufacturers' Record has at different times called attention to the number of railroads being constructed in East Texas and the States parallel with the Mississippi river, one of the most recent being the Kansas City, Pittsburg & Gulf. The western portion of Texas, Oklahoma and Indian Territories, however, have been almost destitute of transportation facilities, although immigration to the Southwest has caused a large influx of settlers into this section, while many new towns have sprung into existence.

The present route from St. Louis and Chicago to the City of Mexico is somewhat circuitous, and it is a well-known fact that a line crossing the northern and western portion of Texas and Indian Territory would shorten the present route by nearly 250 miles. This is perhaps another reason for the activity among railroad promoters and corporations. The rapidly-growing business between the republics necessitates increased transportation facilities between St. Louis and other Western cities and Mexico.

At present about 1200 miles of railroad are actually under construction in the territory mentioned, being promoted by but six companies. These do not include several local lines under way in Texas, but represent the more important projects on which work has actually begun. The most important is the Kansas, Oklahoma & Southwestern. This line is 350 miles in length, and is to extend from Coffeyville, Kan., to Vernon, Texas, in a southwestern direction. At Vernon it reaches the Denver City & Gulf Railroad, while at Coffeyville it will reach the Missouri, Kansas & Texas, the Missouri Pacific and Santa Fe systems. It is believed that the line is being built partly in the interest of Missouri, Kansas & Texas, as when completed it will give the latter almost a direct line from St. Louis into Northwest Texas, while a further extension would bring it to a connection with Southern Pacific system, forming a new southern route from St. Louis to the Pacific coast. The Toledo Construction Co., of Toledo, Ohio, has secured the contract for this work, and it is stated that a large portion of grading has been already completed.

The St. Louis & San Francisco system is extending in Indian and Oklahoma Territories. A branch line between Sapulpa and Oklahoma, 108 miles, is nearly graded, and contract is let to Messrs. Johnson Bros. & Faught, of St. Elmo, Ill., for the entire work, which is being pushed to completion as rapidly as possible.

The Pecos Valley & Northeastern Railroad is now being built by R. C. Cushing, of Chicago, general contractor. The road is practically a part of the Pecos Valley Railroad, which is located in New Mexico and Texas, in a section noted for its fertility. The extension referred to will give the Pecos Valley a connection with the Santa Fe system on the north. It is extended to El Paso, on the boundary

line of the United States and Mexico, the terminus of the Mexican Central Railroad, the Santa Fe will have a direct line from St. Louis to City of Mexico by way of the Mexican Central, which will form a shorter route than at present in operation. The extension now being built is 295 miles in length, which will make the total length of the Pecos system 364 miles.

Also in Texas is a company promoting a line between El Paso and the coalfields near White Oaks, N. M. This company is entitled the El Paso Northeastern, and expects to build about 250 miles in all. The contract has been given for 160 miles of the line to the New Mexico Coal & Railroad Co. The principal promoters are New York and Pennsylvania capitalists, including C. D. Simpson, of Scranton, Pa., and B. S. Harman, of New York. A large amount of work has already been done on the first section of this road.

It is understood that English capitalists are backing what is known as Colorado Valley Railroad Co., which proposes to build 150 miles of line along the Colorado river, passing through Sweetwater, Texas, and including the city of San Antonio on the route. The Toledo Construction Co. has also contracted to build the first seventy miles of this line, while another contract of fifty miles has been awarded to Robert S. Doubleday, of San Antonio. H. Irving Wheatcroft, at Sweetwater, is general manager of the railroad company.

The Choctaw, Oklahoma & Gulf Company, which controls a line between Fort Reno and Wister Station, in the Indian Territory, has decided to make further extensions, and has let contracts for seven miles, which will connect it with the Kansas City, Pittsburg & Gulf, while it has decided to build what is known as El Reno & Southwest branch, an extension of its western division, which will be twenty-five miles in length. The contract for this work has been let to J. W. Maney & Co. Francis I. Gowen, of Philadelphia, is president of the railroad company.

Altogether, it is safe to say that these lines represent an outlay of fully \$15,000,000 when completed.

Southern Pacific Branches.

In relation to the work of the Southern Pacific Company, which has already been referred to in the Construction Department of the Manufacturers' Record, J. T. Mahl, of Houston, Texas, engineer of maintenance of way, writes as follows: "The company has just completed grading and laying a skeleton track on its Arnaudville extension in Louisiana—which is an extension of its present St. Martinsville branch. The proposed line extends from St. Martinsville to Arnaudville, a distance of twenty-four miles, along the west bank of Bayou Teche, through a sugar-cane district. The company's forces are now engaged in erecting section-houses and depots.

"In addition to the above work, the company is now engaged in grading a 19-mile extension of its Thibodaux branch from Thibodaux, La., to Napoleonville, La. The line extends through the sugar-cane belt on the west bank of Bayou La Fourche. It is expected that the grading will be completed by June 15. Tracklaying will be done by this company's forces."

Columbus to West Point.

A line of railroad is being promoted along the valley of the Chattahoochee river which promises to be of much importance, if completed, in that section of the South. At present the Chattahoochee Valley Railroad is in operation between

West Point, Ga., and River View, Ala., a distance of ten miles. A syndicate which includes Messrs. J. J. Hagedorn & Co., of West Point, contemplate building from River View to Columbus, Ga., a distance of about thirty miles, and are now making surveys for this purpose. The extension will give West Point and Columbus, two important manufacturing towns, a direct railroad connection. It reaches the Georgia & Alabama Railroad at Columbus and the Atlanta & West Point Railroad at West Point. Some time ago the Manufacturers' Record announced that the Georgia & Alabama Railroad Co. had secured the Columbus Southern Railroad, by which it now enters Columbus.

Coal and Coke Shipments.

The coal shipments from the George's Creek-Cumberland region by rail for the week ended Saturday, May 21, aggregated 75,761 tons, and by Chesapeake & Ohio canal 6301 tons. The total shipments for the year aggregate 1,585,597 tons, an increase of 200,529 tons over the corresponding period of 1897. The tonnage of the Baltimore & Ohio are 1,047,715 tons, or two-thirds of the entire output of the region for the year to date. This road has so far carried 165,290 tons more than it did by this time last year. The Pennsylvania shows an increase of 36,800 tons.

The coke trade of the Elk Garden and Upper Potomac region aggregates 93,062 tons, an increase of 21,239 tons over last year.

Large Coal Cars.

The Pennsylvania Railroad Co. has determined to increase the carrying capacity of its cars, and it is announced that in the contract recently given to the Schoen Pressed Steel Co. for 1000 steel cars the specifications require each to be of a capacity of 100,000 pounds. Prior to this time 80,000 pounds, or forty short tons, have been considered the maximum capacity, while most of the rolling stock for coal hauling does not average above 55,000 pounds. The employment of steel, however, allows greater space for the load, while the supports and framework, being of metal, it is less bulky than wood. The result is economy of space and much greater strength, which allows the carrying of much heavier weight.

Important Improvement.

A dispatch from Atlanta, Ga., states that arrangements have been made by which the proposed railroad improvements in that city will be carried out. Contracts have been signed for the construction of what is known as the Mitchell-street viaduct, by which a dangerous grade crossing will be avoided and the railroad facilities in the center of the city greatly improved. Work is to be commenced on it by July 1, and improvements are to be completed within one year from that date. The railroad companies contribute \$40,000 of the entire cost, which is estimated to be \$85,000.

A Liberal Policy.

As is well known to readers of the Manufacturers' Record, the Illinois Central Railroad Co. has encouraged its employees to become stockholders, offering them special facilities for the purchase of shares. In consequence, a large number have taken such an interest in the line. In order to secure an attendance of as many of the stockholders as possible at its annual meeting, the company has issued to each one living along the line or its branches a pass to and from Chicago. This will enable the holders to attend the annual meeting without the expense of transportation.

Increase in Earnings.

The latest report of the Georgia Southern & Florida Railroad shows that the gross earnings during April, 1898, were \$68,429.38, as against \$61,521.06 during 1897. The net earnings were \$15,345.17, as against \$13,854.16. For the ten months, from July 1 to April 30, the gross earnings were \$774,074.90, against \$728,963.99 last year, the net earnings during the same period being \$253,378.63, as against \$242,141.25 last year.

Railroad Notes.

H. D. Buckley, of Baltimore & Ohio Railroad, has been elected first vice-president of the Association of American Railway Accounting Officers.

The Southern railway companies are having a large freight traffic in mules and horses for the use of the government. Recently the Louisville & Nashville transported twelve carloads of mules from St. Louis to Tampa, Fla.

The Baltimore & Ohio Railroad, which has of late been handling considerable shipments of California oranges, has decided to add to its terminal facilities at New York an auction room for the use of its patrons in the fruit trade.

In a letter to the Manufacturers' Record H. C. Jackson, of Parkersburg, W. Va., president of the Little Kanawha Railroad Co., states that the company does not contemplate making any extension of this line in the near future, as has been reported.

At the annual meeting of the New Orleans, Fort Jackson & Grand Isle Railroad Co. the following officers were elected: H. C. Warmoth, president; Frank T. Howard, chairman of executive committee; Albert Baldwin, treasurer, and James Wilkinson, secretary.

The Mobile & Ohio Railroad Co. announces the appointments of Frank J. Burke as traveling freight agent, with headquarters at Atlanta, Ga.; C. W. Gibson, soliciting agent, with headquarters at West Point, Miss., and Louis C. Cardinal, traveling agent, with headquarters at Jacksonville, Fla.

The Southern Pacific, it is stated, has placed an order for eleven new engines with the Cooke Locomotive and Machine Works, and the Pecos Valley Railroad Co. has ordered eight from the Brooks Locomotive Works. This company has also placed an order with the Pullman Palace Car Co. for thirty box and twenty flat cars.

The Western Maryland Railroad Co. has begun work upon its repair shops at Hagerstown, Md., and it is understood the construction of its branch to Altenwald, Pa., is to be commenced at once. It is stated that the company intends building a roundhouse at Hagerstown, which will be large enough to accommodate all of the locomotives to be used on this division of the railroad.

The announcement is made of the death of W. B. Walker, Jr., freight manager of the Chesapeake & Ohio Railroad Co. Mr. Walker was one of the best-known railroad men in the country. He was born in Newport, Ky., on September 3, 1850, and entered the railroad business August 1, 1878, since which time he has held a number of important positions with the Chesapeake & Ohio, with the Kanawha Dispatch and with other roads.

United States Senator Martin, of Virginia, has introduced in Congress a bill appropriating \$300,000 for the improvement of the channel of Elizabeth river from Hampton Roads to the Portsmouth navy-yard to a width of 450 feet and a depth of twenty-eight feet.

TEXTILES.

[A complete record of new textile enterprises in the South will be found in the Construction Department.]

Correspondence relating to textile matters, especially to the cotton-mill interests of the South, and items of news about new mills or enlargements, special contracts for goods, market conditions, etc., are invited by the Manufacturers' Record. We shall be glad to have such matter at all times, and also to have any general discussion relating to cotton matters.

A Fight for Self-Preservation at the Expense of Cotton-Growers.

While the agitation in favor of reform in cotton-baling was going on it was the duty of all who had at heart the welfare of the Southern farmer to join in urging the necessity for that reform. But today it is only a question of the choice of means to attain a universally-desired end. For, after less agitation than was ever effective in awakening an agricultural people to the need of a radical change in a prevailing method, the progressive cotton-growers of the South are thoroughly aroused to the fact that the old-time cotton bale must go.

And so we have a condition which goes to show the existence of a business spirit among a class generally regarded as unenterprising and "set in their ways."

As has been pointed out and reiterated by the Manufacturers' Record, success in growing cotton rests upon the same business principles as success in cotton manufacture or any other industry. Wherever there is possible but a narrow margin of profit, every edge must cut, or failure is sure to follow. This means not only the adoption of every labor-saving device calculated to cheapen production, but the practice of scientific economies from the beginning to the ending of the operation. The practice of economies does not merely mean the curtailment of unnecessary expense spasmodically, but it means the adoption of a system, the use of mechanism under which there will be a permanent reduction of annual charges to the lowest practicable point.

A wide-awake owner of a cotton mill, who should find his mill incapable of producing goods at a cost to compete with rivals possessing machinery more modern or plants more advantageously located, would not think of wasting money in making partial improvements. Before spending a single dollar he would look ahead, ascertain what would be most economical for a period of years and re-equip or relocate accordingly.

The cotton planter in this matter of changing antiquated baling machinery must at least exercise the same prudence, forethought and sagacious looking-ahead that the manufacturer or merchant would exercise in his business. Any mistake in changing the mechanism of so stupendous an industry would be a national calamity. In deciding upon the kind of change to make in baling cotton, the grower must adopt the system that has come to stay, and must hearken to the testimony of those whose familiarity with cotton facts the world over enables them to foresee the requirements of consumers. Ill-considered action simply means wasting money on what in the nature of things will prove a mere makeshift.

A number of conventions have recently met to discuss this very question. Some of these have promptly decided upon the system which the preponderance of expert testimony has declared in favor of, and that is the cylindrical. It is likely that all the meetings held during the last few months would have pursued the same course had not the cry of a "trust" or monopoly been raised by interested men

against those who are introducing the new bale, for the purpose of prejudicing the farmers against this system. And it seems that for the time being a great deal of misconception has been created, but this misconception will ultimately be removed by a knowledge of the truth.

Other meetings have decided on a smaller square bale—the "uniform gin-box" system. This is being urged by the compress interests, so that they may continue to levy toll on the cotton crop in transit from farm to factory. This is entirely natural and in accordance with the first law of nature—self-preservation—but at the same time it is making mere "cat's-paws" out of the growers of cotton. This smaller bale might be a step in the right direction if it did not require subsequent compression. Therefore at best it means only trouble and expense without real progress. It is an improvement, as is everything that causes cotton to be better handled and covered, but it does not meet the demand of the times for a system that shall do away with the rehandling and the subsequent compression, and do all of this at the gin itself. It is simply a change to be followed by other changes, and will leave cotton-baling still far behind the times. In the end, all who are now temporizing will discover that money and time, to say nothing of vexation of spirit, would have been saved by adopting the best system at the start; for it has never been found worth while "to make three bites at a cherry."

T. P. G.

To Issue Bonds for \$125,000.

The Charleston Mills, of Charleston, S. C., has decided upon an issuance of bonds to the amount of \$125,000 in order to supply working capital and to consolidate the company's indebtedness. This company established its plant about a year ago, and from the start has utilized colored operatives, who have been found, after twelve months' work, to be satisfactory and to enable the company to conduct the manufacture of cotton goods on a profitable basis.

The capital paid in at the start was \$126,800, and it has been found that the additional capital to be obtained by bonds, as above noted, was necessary to an economical operation of the business. This mill is equipped for producing sheetings, shirtings and drills, with 720 narrow looms, thirty-two broad looms and 28,000 spindles.

The Cotton Movement.

In his report for May 27 Secretary Henry G. Hester, of the New Orleans Cotton Exchange, shows that the amount of cotton brought into sight during the season has been 10,738,352 bales, an increase of 2,357,725 bales over the same period last year. Exports were 7,005,111 bales, an increase of 1,273,230 bales. Takings by Northern spinners, 2,194,543 bales, an increase of 449,242; by Southern spinners, 951,569, an increase of 51,257 bales.

Textile Notes.

Messrs. C. A. Williams & Bro., of Winchester, Va., have ordered an equipment of machinery to replace the machines which were burned recently in their mill.

The Franklin Woolen Mills, of Sullivan, Mo., has been incorporated with capital stock of \$4000. The incorporators are Messrs. Henry Lowenstein, S. R. Gordon and Henry Ashoff.

The Board of Trade of Pittsburg, Texas, has about completed arrangements that will insure the erection of the cotton, woolen and knitting mill noted

last week. It is said that a \$100,000 plant will be established.

The Indian Head Cotton Mills, of Cordova, Ala., has about completed sufficient production of its goods to make its first shipment. The goods are now being prepared for shipment to China, to which country the product of the Indian Head mill is contracted for the next four years.

The Riverside Knitting Mill, of Little Falls, N. C., has secured a contract to supply the national government with knit goods. The award was made at Philadelphia, Pa., by the paymaster stationed in that city. The mill is to deliver 100,000 garments inside of sixty days. The mill will run a night force in order to fill the contract on time.

The Thomas Cotton Mills, of Little Rock, Ark., has been incorporated, with capital stock of \$75,000, of which \$50,000 has been subscribed. The incorporators are Messrs. Dr. A. D. Thomas, Maxwell Coffin, O. H. Thomas, J. F. Lenon and J. A. Watkins. The company will operate the old Quapah Mills, which was recently purchased and remodelled by the incorporators.

Plans have been completed for the buildings of the new Kinston Cotton Mills, of Kinston, N. C. Work on the buildings will be commenced at once. The equipment of machinery will include 5000 spindles, etc., for the production of hosiery yarns. Contract for the pickers, drawing frames, slubbers, intermediates, and roving frames, spinning frames, etc., was awarded to the Howard & Bullough American Machine Co., of Pawtucket, R. I.

Large Freight Carrier.

The largest steamship yet to enter New Orleans is the Monmouth, which belongs to the fleet of Messrs. Elder, Dempster & Co. The Monmouth, which was built by Harland & Wolf at Belfast, Ireland, is 594 feet long, has fifty-six feet beam and forty-two feet depth of hold. This steamship lacks seventy-five feet of being as long as the Great Eastern. The Monmouth's net tonnage is 6118, gross tonnage 8000, and her dead-weight capacity is 12,000 tons. The vessel has all of the latest equipment for carrying cotton and miscellaneous freight; also fittings for live-stock.

Mr. M. E. Ingalls, president of the Chesapeake & Ohio Railway Co., in a letter to the Manufacturers' Record, says:

"I have read the article 'A Nation Born in a Day' with great interest. I quite agree with everything you have said. I was against this war. I have never seen anything so unnecessary and uncalled-for. At the same time I can see out of it will come great prosperity, and there is great safety for our country. We were getting into a very bad condition politically. It was possible for demagogues to howl and rant, and they seemed to interest the common people. They were foolish enough to think that war was their opportunity. I believe the result will be they will be passed to the rear and the common people will have their thoughts turned into other channels. Take, for instance, the matter of school books in the South, and in fact in the North; our children ten years from today will not be reading about the terrible oppression of England and the way we whipped them in 1775 at Bunker Hill, nor will the children in South Carolina be reading about the enormities committed by Northern soldiers in 1862 and 1863 in the South. They will rather be reading the victory of Dewey, and I hope some others that we may get in before the fight is over. Out of it will come great good."

COTTONSEED OIL.

This department is open for the full and free discussion of trade topics and practical questions, and contributions are invited from men who are identified with this industry. Items of news are always acceptable.

The Market for Cottonseed Products.

New York, N. Y., May 31.

No important change has taken place in the position of the cotton-oil market since our last. Lard has weakened, but this is not reflected in cotton oil, one of the reasons being that the latter did not advance in price corresponding with lard. It may be added that while trading at the moment is moderate, there is no desire on the part of holders to sell at prices here-with quoted, and notwithstanding the decline in the hog product, cotton oil is stronger. The outlook for improved business is encouraging, as evidenced by increased inquiries both for home and foreign consumption, and as it is conceded that stocks in the country are light (production having practically ceased), when compared with those of a year ago, the prospect for a still further upward movement in prices is decidedly assuring. Lard is quoted Chicago, July delivery, at 6½ cents, and while a decline is thus recorded in the hog product, tallow has taken an upward turn and is now quoted at 4½ cents, New York city make. Compound lard is quoted at 4½ to 5 cents here, and in good demand. With regard to prime yellow, 26 cents has been refused by holders. A good demand obtains from refiners for summer yellow, due to the increasing demand for compound lard, and for desirable grades of yellow well suited for bleaching 27 cents is asked. At 26½ cents several large lots were disposed of earlier in the week. It is felt that prime summer yellow will be marked up to 30 cents before midsummer, the ruling market conditions unmistakably pointing that way—a circumstance which explains the difficulty experienced in finding sellers at present prices. No tank crude, prime or otherwise, is on offer, but small parcels of barreled crude are disposable at 21 cents. White oil is now quoted at 32 cents, several lots having changed hands at this price. Exports are limited in volume, notwithstanding the lower ocean freights. In this connection, however, assuming that shipments can be effected regardless of the war, it is difficult to see how important purchases, especially for France, can be much longer deferred, allowing the important question of price, even now exhibiting an upward tendency, to exercise its usual influence. The important reciprocity trade agreement just concluded between the United States and France, by which the latter country reduces her rates by one-half on meat products and one-third on lard compounds, cannot fail to create new business while developing present connections. Liverpool refined oil is strong at 16s. 9d. Cottonseed products in England are strong, presenting an upward tendency, due in part to the comparative scarcity of Egyptian seed. For June cargoes £5 10s. to £5 14s. is quoted Hull, a price far above buyers' ideas. Receipts of oil at this market for the week are 4150 barrels and exports of 7500 barrels. An authority here states that stocks in New York are two-thirds of a year ago, the shipments just noted emphasizing the situation in this respect. The following are closing prices: Crude, 21 to 22 cents; crude, loose f. o. b. mills, 17 to 19 cents; summer yellow, prime, 25½ to 26 cents; summer, off grades, nominal; yellow, butter grades, 28 to 29 cents; white, 31 to 32 cents; winter yellow, 31 to 32 cents, and salad oil, 32 to 33 cents.

Cake and Meal.—Nothing new to re-

port with regard to the home market. American cotton cakes have been well cleared off the English market and values have an upward tendency. Prime soft cake is now quoted in Liverpool at £5 to £6 10s.

Oil-Mill Superintendents.

The annual meeting of the Oil Mill Superintendents' Association will be held at Dallas, Texas, from June 6 to 8. Among the subjects to be discussed are "Remodeling a Mill so as to Attain the Highest Point of Efficiency or Economy," "The Operation and Maintenance of a Mill," and "Boilers, Their Operation and Maintenance." Mr. Wm. Connelly will give a practical demonstration of testing seed for yield of oil, testing cake for percentage of oil, testing oil for fatty acid and for loss in refining.

In New Orleans the market for cottonseed oil shows a higher range of values, especially in off summer yellow, which has secured an advance during the past ten days. There is a good export demand for cottonseed meal, some 25,000 sacks having been shipped during the past week. Receivers' prices for products are as follows: Cottonseed, \$7 per ton of 2000 pounds net to the mills, no commission of any kind to be added; cottonseed meal jobbing per carload at depot, \$17.50 per short ton of 2000 pounds; for export per long ton of 2240 pounds f. o. b., \$19.75; oilcake for export, \$19.75 per long ton f. o. b.; crude cottonseed oil at wholesale or for shipment, strictly prime oil, crude, 16½ cents, loose, f. o. b. tanks at Mississippi valley points; in barrels, 19 cents; cottonseed hulls delivered per 100 pounds, according to location of mill, 12 to 17½ cents; linters, according to style and staple—A, 3½ cents; B, 3½ cents; C, 2½ to 3 cents; ashes, none; refined cottonseed oil, prime in barrels per gallon at wholesale or for shipment, 22 cents for export.

Large Sugar Mills for St. Bernard Parish, Louisiana.

As stated several weeks ago, the Kenilworth Co., an English organization, purchased five plantations in lower St. Bernard and one in Plaquemine parish, containing about 6000 or 7000 acres of cultivable land. It was stated that the Kenilworth Co. would make an effort to have its mill completed by the coming fall, when the cane crop will be harvested. The company is desirous of having its factory in operation by the latter part of October, and to that end contracts for the building and machinery were recently awarded.

The contract for the mill plant was secured by Krajewski & Pesant, of New York. It will consist of a six-roller mill, 34x84 inches, worked by a Lane & Bodley engine 26x60. The crusher will be six and one-half feet long by twenty-six inches in diameter, operated by a Lane & Bodley engine, 16x42. The cane carrier will be 200 feet long, six feet four inches wide and three feet deep, and will furnish 1200 tons or more of cane. The Daniel Edwards shops at New Orleans will construct the large evaporating plant, including two 10-foot vacuum pans, a 10-foot triple effect of 300,000 gallons and the Deming method of clarification. C. S. Burt & Co., of New Orleans, have the contract for the steam plant of 1800 horse-power. The bagasse burner and carrier, as well as all the engines, will be supplied by them.

The company will have considerable cane to grind the coming season, and next year many more acres will be under cultivation. The enterprise will furnish employment to a large number of people.

PHOSPHATES.

Phosphate Markets.

Office Manufacturers' Record,

Baltimore, Md., June 2.

The tone of the market for phosphate rock is unchanged, while values are firm, in sympathy with other fertilizer ingredients. The coastwise business is improving and vessels are offering more freely to load phosphate rock at Florida and Carolina ports. The market at points of production in South Carolina is firmer as to values and there is a better development of rock among river miners. The foreign demand is better, and during the four months ending April 30 the shipments from Beaufort amounted to nearly 12,000 long tons. There is a better Florida business expected in the near future, as there are a number of charters reported each week to load at Florida ports. Considerable activity prevails in the Tennessee phosphate region, and at Mount Pleasant shipments for April amounted to nearly 18,000 tons, with stock on hand May 1 amounting to 12,000 tons. The tone of the Tennessee phosphate market is firm and high-grade rock at Mount Pleasant is quoted at \$1.60 to \$1.75 f. o. b. The charters reported during the past week in New York are as follows: Two British steamers, 1200 and 1400 tons, from Pomaron to Charleston, S. C., or Savannah with sulphur on private terms, June; British steamer Harlyn, 929 tons, from Fernandina to Tyne with phosphate rock at 22s. 3d., option Rotterdam 23s. or Hamburg 24s., July; British steamer Torgorm, 1065 tons, from Fernandina to the United Kingdom or Continent with phosphate rock on private terms; British steamer Davenry, 1577 tons, from Fernandina to Landscrova with phosphate rock on private terms, June; a British bark, 1332 tons, from Coosaw and (or) Port Royal to Yokohama with phosphate rock at 32s. 6d.; schooner Madeline Cooney, 605 tons, from Charlotte Harbor to Baltimore or Newport News with phosphate rock at \$1.80, and schooner Andrew Adams, 712 tons, from Punta Gorda to Baltimore with phosphate rock on private terms.

Fertilizer Ingredients.

The month opens with a very promising outlook for trade in ammoniates during the fall season and all descriptions of ammoniates continue firm. Messrs. Thos. H. White & Co., in their circular for May, say: "Prices for ammoniates advanced during the first half of May under a large inquiry and have been well supported since. The advance in freights scheduled to take effect May 1 was not strictly adhered to as coast cities; inland points, however, are firm at tariff." Stocks in the West are considerably reduced, and packers are asking higher prices. There is an ample offering of sulphate of ammonia and prices are steady. Nitrate of soda is still unsettled, with prices lower today. Fish scrap is firm, with indications of a light catch.

The following table represents the prices current at this date:

Sulphate of ammonia (gas)	\$2 50 @	—
Nitrate of soda	2 50 @	—
Blood	1 85 @	1 90
Hoof meal	1 70 @	—
Azotine (beef)	1 95 @	2 00
Azotine (pork)	1 95 @	2 00
Tankage (concentrated)	1 75 @	—
Tankage (B and 20)	1 85 @	1 90 & 10
Tankage (C and 30)	1 50 @	16 00
Fish (dry)	20 00 @	—
Fish (acid)	12 00 @	—

Phosphate and Fertilizer Notes.

A charter was granted last week to the Newbern Oil and Fertilizer Mills, of Newbern, N. C., with a capital stock of \$25,000. The stockholders are C. L. Ives, R. F. Broadbush and others.

The foreign shipments of Tennessee phosphate rock from Newport News, Va.,

made by the United States Shipping Co., of Newport News, Norfolk and New York, from February 15, 1897, to April 30, 1898, amounted to 3653 tons, all to Great Britain and the Continent.

The foreign shipments of phosphate rock from Beaufort, S. C., for the four months ending April 30 were as follows: February, 1656 tons to Dublin; March, 4999 tons to London and Liverpool, and 1500 tons to Garston Dock, and in April 3300 tons to St. Nazaire.

There still continues a good demand for Tennessee phosphate rock, and the movement in the Mt. Pleasant field is very satisfactory. Shippers are sending forward all the rock they can conveniently handle at the moment, and during April about 18,000 tons were shipped, with stock on hand May 1, 12,000 tons. The shipments from the Hickman county field amounted to 1447 tons. There is a good foreign inquiry for phosphate rock, and there is at present about 7000 tons to go forward, but on account of high freight rates shipments have been delayed.

Jottings at the Ports.

The Consolidation Coal Co. of Baltimore is having an ocean-going tug built at the Columbian Iron Works of Baltimore which will be used in towing barges between Baltimore and the Northern market.

The Baltimore & Ohio Railroad Co. has ordered an additional car float to increase its facilities for transporting freight in Baltimore harbor. The float will be 225 feet long and large enough to accommodate ten freight cars.

The ship-yards at Baltimore have secured several contracts from Northern parties recently. The Campbell-Zell Co., of Baltimore, is to furnish a tugboat for the Boston Towboat Co. to be seventy-eight feet long and eighteen feet beam.

The Interstate Coal & Coke Co., of Baltimore, has chartered three vessels to take coal to Honolulu. The combined cargoes of the ships will amount to 8000 tons. The fuel is for the naval coaling station. The company has shipped a large quantity of coal to Key West.

The export trade between Baltimore and South America continues, in spite of the war. Messrs. C. Morton Stewart & Co. recently cleared a vessel for Bahia and Rio Janeiro with 7500 barrels of flour. The vessel will bring back coffee and other South American products.

The truck receipts at Baltimore from points in Tidewater Virginia and Chesapeake bay are very large. Recently one steamer brought to the city over 7000 packages of fruit and vegetables of different kinds. Large quantities are used in the local canning establishments, and a portion shipped North by rail.

During the month of May the cargoes taken from the Baltimore & Ohio elevators at Locust Point, Baltimore, aggregated over 7,000,000 bushels of wheat, corn, rye and oats, amounting in value to about \$7,000,000. All of the grain has come from the West. The majority of the shipments have been of corn. All the shipments have left this port under the British flag.

The Commercial Club of Mobile, Ala., has elected as officers for the coming year Erwin Craighead, president; W. K. P. Wilson, first vice-president; Godfrey Mertz, second vice-president; Herman W. Leinkauf, George Fearn, Jr., Samuel L. Hahn, Raphael Semmes and Stewart Brooks, directors. The directors who hold over are Messrs. J. G. Mann, E. O. Zadek, John H. McAndrew, Murray Wheeler and J. P. Roberts.

LUMBER.

[A complete record of new mills and building operations in the South will be found in the Construction Department.]

LUMBER MARKET REVIEWS.**Baltimore.**

Office Manufacturers' Record,
Baltimore, Md., June 2.

While the lumber market cannot be called active, there is still a fair volume of business reported. Manufacturers and others in the trade take a very hopeful view of the situation, and, with all war conditions finally disposed of, the demand will be larger than usual from the various foreign and domestic sources. The list of values throughout the general market is firmer, and, as stocks are considerably reduced, orders are in some cases hard to execute promptly. Air-dried yellow pine is in good demand and box lumber and flooring are higher. There is a better demand for kiln-dried North Carolina yellow pine, and from both domestic and foreign sources a number of inquiries are coming to hand. White pine is firm, with stocks about ample for the demand. In hardwoods there is a fair business reported, while receipts are light and stocks on hand not so well assorted. There is a fair demand for oak, with a good inquiry from Eastern markets and for foreign account. Shipments of walnut are larger than usual.

Savannah.

[From our own Correspondent.]

Savannah, Ga., May 30.

The past week has been one of considerable activity in this port, and in all branches of the lumber business a good trade is being developed. The coastwise business is not at all affected, and vessels are now offering freely, with rates coming down to the normal. During the week nearly 4,000,000 feet of lumber and other wood products left the port, and the demand for lumber is more pronounced. At all milling points along the several lines of railroad entering this city mills are generally doing a good business and running up to their full capacity. At other Georgia ports, notably Darien, Sapala and Brunswick, shipments of lumber are of better volume, and freight rates are lower. During the past week the following shipments of wood products were reported from this port: For Baltimore barkentine Albert Shultz with 346,380 feet of lumber, schooner City of Jacksonville with 265,965 feet and bark Sacheim with 600,000 feet. The schooner William H. Shubert cleared for Philadelphia with 416,007 feet of lumber; schooner Charmer for New York with 204,695 feet, and schooner Susan W. Pickering for Boston with 302,412 feet. New York steamers cleared with 820,000 feet of lumber, Baltimore steamers with 111,000 feet and Boston steamers with 153,723 feet. Among the charters reported in New York last week were the following: Schooner D. D. Haskell, 274 tons, from Brunswick to Norwich with lumber at \$5.37½; schooner S. G. Hart, 475 tons, from Brunswick to New York with lumber at \$5.12½; schooner W. W. Ward, 1145 tons, from Savannah to New York with crossies at 16½ cents per forty-four feet, and schooner Roger Drury from Darien to Norwich with lumber at \$5.50.

Mobile.

[From our own Correspondent.]

Mobile, Ala., May 30.

The week under review has been a busy one at this port, and in all channels of the lumber and timber industry the movement has been unusual in the volume of business. Prices of timber are lower,

and sawn is down to 8 cents per cubic foot, 40-foot basis, with contracts nominal. There is a good demand for cypress at 6 to 9 cents per cubic foot, according to the average. Hewn timber when placed upon the market will bring 10 to 12 cents, basis of 100 cubic feet, average B1 good. There is no demand for hewn oak or poplar, and quotations are nominal. The lumber trade is improving, and the demand from South America is active, as well as from Great Britain and Continent. During the past week the following shipments were reported: Ship Eilerslie for Southampton with 27,466 cubic feet of sawn timber, 50,250 cubic feet of hewn timber and 20,056 feet of lumber; bark Chieftain for Gluckstadt with 8000 cubic feet of sawn timber and 610,464 feet of lumber; bark Carson Boc for Barry's Dock, Wales, with 51,073 cubic feet of sawn timber and 21,870 feet of lumber; bark Aiku for Newcastle with 51,402 cubic feet of sawn timber and 11,264 feet of lumber; bark St. Vincent for The Tyne with 83,355 cubic feet of sawn timber and 19,290 feet of lumber; schooner Iolanthe for Vera Cruz with 325,000 feet of lumber; bark Delthur for Barrow-on-Furness with 917,531 feet of lumber; ship Marabout for Buena Ayres, A. R., with 1,101,448 feet, and schooner Bentley with 266,429 feet for Cartagena, Mexico. The total shipments of lumber from this port since September 1, 1897, amount to 42,461,186 feet. The exports of other woods from the same date amount in cubic feet to 30,259 oak, 6598 gum, 12,688 poplar, 701 whitewood, 100 ash, 1355 walnut, staves 97,406, pickets 29,500, crossies 60,747, shingles 496,000 and logs 2500. The outlook for an active lumber trade is very encouraging, and from the number of charters closed during the past week a considerable quantity will be shipped in June. Saw mills at this and adjacent milling points are all busy, and generally well supplied with orders. Among the charters reported during the past week in New York were the following: British steamer Weybridge, 1604 tons, from Pensacola to the United Kingdom or Continent with sawn timber at 130/, July-August; British steamer Lynrowan, 1797 tons, from Pensacola to west coast of England with sawn timber at 130/ one port, 135/ if two, June; brig Mary Gibbs, 399 tons, from Pascagoula to Boston with lumber at \$6.37½, and an Italian bark, 1121 tons, from Ship Island to Buenos Ayres with lumber at \$14.62½.

St. Louis.

[From our own Correspondent.]

St. Louis, Mo., May 30.

Under present conditions the lumber market here shows a gratifying improvement and in almost every channel of the industry there is a fair volume of business reported. The excellent crop prospect in the West and Southwest tends greatly to improve the tone of the general market, and prices all along the line, while showing no material advance, are generally firm at quotations. There is a great improvement in yellow pine, and now that the climatic conditions are favorable for handling lumber there is a decided tendency towards appreciating values. Stocks of yellow pine are by no means excessive, and as orders are beginning to come in more freely there is not likely to be a case of overproduction during the summer and fall months. There is a brisk river movement in cottonwood and cypress, with a good demand for the former, while for the latter a fair volume of business is reported. In white pine there is also a fair demand, with prices firm and a shade higher. There is a very satisfactory volume of business reported in hardwoods, and, while orders

are not as plenty as in the early spring months, the demand is good. Furniture manufacturers, car shops, wagon shops and other woodworking concerns are buying freely, and it is said that the coming fall trade will be of much greater volume than the spring trade of the current year. Stocks as a rule at all the mills throughout the country are light, and in some cases orders are difficult to fill promptly. Oak of all kinds is in active demand, and plain red oak and quartered white oak are much called for, while stocks of both are light. Receipts of poplar are fair and stock is moving freely, with prices firm and hardening. The outlook for a good demand for ash is encouraging, while prices are firm. Walnut, for both home and export, is in good request, and during the past week the volume of trade in this wood has been heavy. Other hardwoods are in good demand, with prices firm. The receipts of lumber as reported by the St. Louis Lumbermen's Exchange for the week ending May 21, exclusive of receipts from the upper Mississippi, are given as follows: From January 1 to May 21, 1898, 359,251,000 feet, against 266,096,000 feet for the corresponding period in 1897, being an increase of 93,155,000 feet. Shipments from January 1 to May 21, 1898, were 188,280,000 feet, against 158,976,000 feet last year, being an increase of 29,304,000 feet.

Lumber Notes.

Captain Tift, of Tift, Ga., whose mill plant was recently destroyed by fire, has commenced the work of rebuilding and will soon have a new plant with all modern improvements in full operation.

The Reliance Lumber Co., of Beaumont, Texas, has closed a contract with the Atlantic & Mexican Gulf Steamship Co. for the steamer Heloise. She is due at Sabine Pass and will take on 400,000 feet of ties and timber for Vera Cruz.

The first annual meeting of the Louisiana Retail Lumber Dealers' Association will be held at Lafayette, La., on the 6th and 7th inst. Business of much importance regarding lumber interests will be brought up before the new association for discussion.

The shipments of lumber last week from the port of Mobile, Ala., amounted to nearly 4,000,000 feet and of timber 271,555 cubic feet. The total shipments of lumber from Mobile since September 1, 1897, amount to 42,461,186 superficial feet, and of timber 2,886,895 cubic feet.

At a special meeting of the stockholders of the Sannel Cupples Woodenware Co., of St. Louis, Mo., held in that city last week, it was decided to increase the capital stock of the company from \$1,000,000 to \$2,000,000. The increase was demanded by the increased business the corporation has been doing for some time past.

The receipts of building material in New Orleans for the week ending May 27 were as follows: Lumber, 1,777,000 feet; shingles, 190,000; laths, 40,000; oak staves, 132,686, and cypress staves, 36,000. The total receipts of lumber for the season amounted to 59,017,206 feet, against 57,145,000 for the corresponding period last year.

It is reported that the St. Louis office of the Morehouse Lumber Co. will be discontinued, and that George W. Dodge and E. Sundberry will commence a lumber business at Cairo, Ill. Mr. Dodge has been secretary and treasurer of the Morehouse Lumber Co., and Mr. Sundberry general manager of the same company. The firm will be known as Dodge & Sundberry.

The Cumberland Lumber Co., of Cumberland, Md., held its annual meeting in

that city last week. Mr. R. R. Henderson was re-elected president, and the other officers retained were Duncan Sinclair, vice-president; Alexander Adams, secretary and treasurer, and John T. Dixon, general manager. The mills of the company are located at Ronceverte, Greenbrier county, West Virginia, on the Baltimore & Ohio Railroad. A handsome dividend was declared from the earnings of last year.

Some of the largest dealers in pine and cypress lumber in the Southwest met on the 23d ult. at Waco, Texas, to consider matters of importance relating to the lumber industry. Those present were members of the committees on finance and membership of the Texas Lumbermen's Association, of which W. B. Brazzelton and R. H. Downman, of Waco, are chairmen. The secretary of the association stated that the export trade in lumber was somewhat disturbed by existing conditions, but demand at home was active, with prices sustained in all lines of lumber.

The following steamers of the Clyde Line cleared last week from Jacksonville, Fla., for New York with lumber and other merchandise: Algonquin with 200,000 feet of lumber, Delaware with 250,000 feet of lumber and 2000 crossies, Seminole with 400,000 feet of lumber and 8000 bundles of shingles and the Oneida with 250,000 feet of lumber and 2000 crossies. Other shipments were the schooner Isabella Gill for Washington, D. C., with 425,000 feet of lumber and 100,000 shingles, and schooner John W. Hall for New York with 250,000 feet of lumber.

It is stated that a plan has been formulated by which the sash, door and blind factories of several States are to be purchased and controlled by an English syndicate. The cities embraced in the proposition include Minneapolis, St. Paul and Winona, Minn.; Binghamton, Addison, Hornellsville, Syracuse and Buffalo, N. Y.; Oshkosh, Merrill and Milwaukee, Wis.; Clinton, Dubuque, Muscatine and Lyons, Iowa, and Rock Island, Ill. It is said all are willing to sell out for cash, but a number are unwilling to give up control of their plants to a syndicate and retain stock.

Under present war conditions the coastwise lumber trade is beginning to show a better volume of business. Desirable vessels are offered more freely by owners as the risk of capture is becoming less hazardous. During the past week the following lumber charters were reported in New York: Schooner Sarah Potter, 342 tons, Ferdinandina to New York, \$5.25; schooner S. G. Hart, 475 tons, Brunswick to New York, \$5.12½; schooner Joel Cook, 381 tons, Charleston, S. C., to New York, \$5.25; schooner M. and A. Beswick, 142 tons, Norfolk to Bridgeport, \$2.50, and two schooners, Norfolk to New York, \$2.25; schooner Roger Drury, 343 tons, Darien to Norwich, \$5.50; schooner G. H. Mills, 281 tons, Norfolk to Boston, \$3, and schooner W. W. Ward, 1145 tons, Savannah to New York with crossies at 16½ cents per forty-four feet.

The Right Course.

My moral for these times is this: When a man's country has by its constituted authorities embarked in war, it is the height of baseness to say anything or do anything which will encourage the enemy. It is of no sort of consequence what your opinions were three months ago; your duty now is to stand by your country, "right or wrong," to cheer on our gallant fellows on the ocean and on the land, and welcome them home again to grateful hearts.—James S. Biddle, of Philadelphia, in New York Sun.

MECHANICAL.

Attrition Grinding Mill.

Present or prospective users of grinding machinery, especially present users who are discarding burr dressing, will be interested in the "Muncy" attrition grinding mill, which we illustrate. This style is claimed by the manufacturers to be in great demand by those who are willing to use sufficient power to operate it.

An attrition mill consists of two fast-running heads on which are bolted grind-

guide similar to that of an iron lathe. On the upper base are cast two parallel cog sections meshing into pinions mounted on a cross-shaft, which, in turn, is operated by a hand lever on the side of the machine. By removing two machine bolts and turning three T bolts one of the runner-heads can be run back, as seen in the illustration.

There is a hand hole on the back of each runner-shell covered by movable caps. When the caps are turned down, as shown in cut, there is free access to the bolts holding grinding plates.

It is quite necessary to open a machine

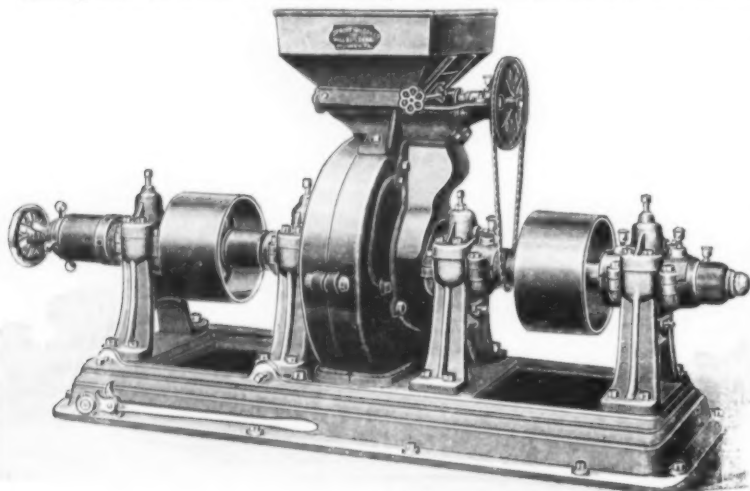


FIG. 1.

ing plates made of the toughest and hardest metal, all ground to a perfect uniform size and thickness. On these plates are cast honeycomb V-shaped projections, with the smallest end cast to the plate. Being this shape, these projections keep sharp much longer than they otherwise would. When they become dull on the cutting edge the cross-belt can be changed to the opposite pulley, reversing the motion of the running heads, thus securing a sharper edge on the grinding projections. When it becomes necessary to renew the grinding plates (which will last from six to twelve months, and when necessary can be replaced at a slight cost),

of this type from time to time for inspection as well as changing plates. This machine can be opened and closed without removing driving belts, and when bolted together the two runner-heads will always come in perfect face with each other. The pedestals supporting the self-oiling bearings are provided with set-screws to adjust them in case the one bearing should wear the least bit more than the other (thus changing the face of the runner-plates proportionately). With these combinations the operator can keep the disks running positively true.

The mill is provided with an end-shake force feed, which is perfect and noiseless.

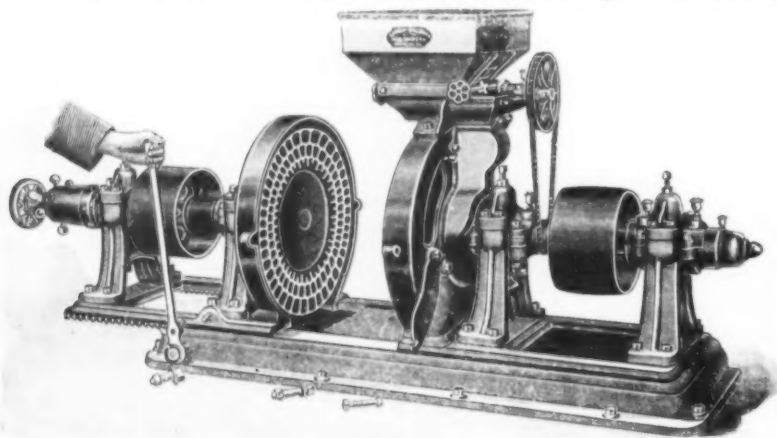


FIG. 2.

they can be unbolted from the runner-plate and new ones substituted as hereafter described.

The grinding heads are run at a high speed in opposite directions, thus bringing the material to be ground in violent contact. This, together with the grinding plates, will reduce the material to any degree of fineness desired, and lessen materially the work to be done with the grinding parts.

Fig. 1 shows the mill ready for grinding; Fig. 2 shows it open, ready to remove and renew the plates. One of the runner-heads is mounted on a double base. The upper base is provided with a V-shaped track planed and fitted to a

A patent ball bearing is used at both ends of the mill. This bearing consists of steel balls running between two highly-tempered steel disks, greatly increasing the capacity of the mill, lessening the power required and reducing the friction to a minimum, requiring but very little oil.

The mill contains two springs, one of which has sufficient tension at all times to keep the heads from drifting together when running empty, and the other to prevent serious damage should any iron or other hard substance enter the mill.

For any further information desired, address the makers, Messrs. Sprout, Waldron & Co., Muncy, Pa.

Hollow Drills and Oil-Tube Drills.

In our issue of May 6 an article describing the Morse drills was made to read confusingly by reason of an unfortunate transposition of the lines of type. To correct any wrong impression that may have been produced in the minds of readers of this department the article is presented in its correctness.

Hollow drills for deep drilling or long holes are manufactured by the Morse

drill shall revolve, the work revolving instead. The oil is forced through a flexible tube to the drill, the tube being connected to the drill by means of a coupling. Drills of special lengths, with oil tubes, are also furnished as desired.

When requested, taper-shank drills are made the same style as the cut of straight-shank drills, and straight-shank drills are made the same style as the cut of the taper-shank drills.

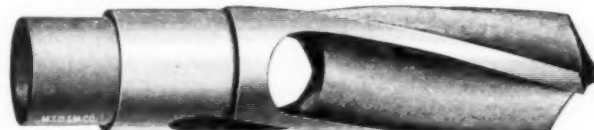


FIG. 1.—HOLLOW DRILL FOR DEEP DRILLING.

Twist Drill & Machine Co., of New Bedford, Mass.

The drill shown in Fig. 1 has a hole lengthwise through the shank connecting with the grooves of the drill. The shank can be threaded and fitted to a metal tube of any length desired. The tube is of proper diameter to admit the passage of the lubricant down the outside of the tube to the point of the

Improved Crimpers.

The makers of this machine call special attention to the following improvements:

1st. The top roll is perfectly rigid, having extra long journal bearings, with practically self-adjusting box bearings to compensate for wear, which are conveniently adjusted by the top set-screws in a moment's time, thus preventing any lost



FIG. 2.—TAPER-SHANK DRILL WITH OIL TUBE.

motion in said bearings, being self-contained. 2d. The lower roll is conveniently and accurately adjusted, both ends at one time, by special large steel screws. Experience has proven that it is not proper or practical to adjust the top roll, as the adjusting screws would soon become worn more or less, and in which case the

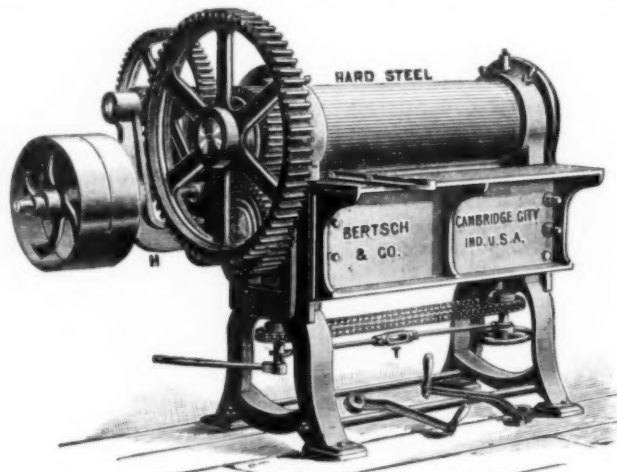


FIG. 3.—STRAIGHT-SHANK DRILL WITH OIL TUBE.

per revolution. For further information as to the use of this drill see inset between pages 22-23 of the Morse Twist Drill & Machine Co.'s catalogue.

The drill shown in Fig. 2 has a center hole through the shank connecting with the oil tubes of the drill. The oil is forced through a flexible tube into the spindle

top roll would not be rigid, and would be liable to raise more on one side than on the other, especially if the metal is not of an even thickness, or should be to one side of the center of the roll, and thus not crimp the metal a uniform depth across the sheet. Therefore, the lower roll being adjusted instead of the top roll, as



IMPROVED CRIMPER.

which holds the drill, stuffing-boxes connecting the tube with the spindle, and the oil from the pump is so conveyed to the point of the drill. This drill in use may or may not revolve.

Straight-shank drills with oil tubes inserted are also made, as shown in Fig. 3, but in this case it is not intended that the

usual, there cannot be any lost motion in the said adjusting screw with which to contend, as same will be rigid and insure better work, having rigid or permanent foundation on top and bottom roll.

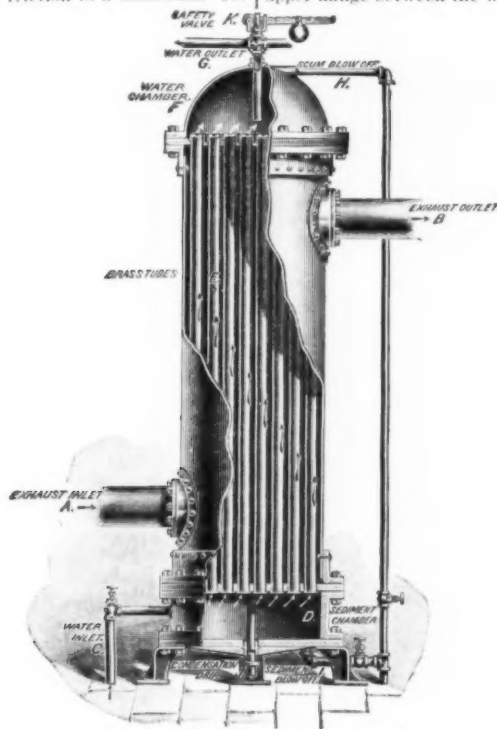
3d. The lower roll journal bearing boxes are conveniently adjusted sideways, as it is absolutely necessary to keep

the rolls in accurate line with each other; in other words, the corrugations in the two rolls must be in proper line with each other to prevent imperfect work, and also requiring less power. Also by this arrangement there is ample compensation for the wear of the pinions on the roll journals, to properly adjust the roll side-ways, so the corrugations in the lower roll will be in the center and in line with the upper corrugations, and not to one side, as usually indicated more or less on the crimped metal where a roll is working under these difficulties, and also out of alignment and cannot be adjusted properly. Heavy machines are easy to get out of alignment (frames and rolls) in transferring from place to place, in which case cannot accomplish good work.

4th. The frames are heavy and practically self-contained by the attached heavy angle-shaped table which is planed and fitted to the frames rigidly. Also the back gearing is self-contained by the attached heavy shaft support bracket, which is planed and fitted rigid to the main frame. The gearing is out of the way, being on one end, compact and in line, reducing friction to a minimum. No

sediment chamber, heater proper and water chamber. The exhaust steam enters the heating chamber and rapidly transmits a large percentage of its heat to the water passing through a large number of seamless brass tubes. Thus is the water heated to a high temperature before entering the boiler by virtue of a means of waste, particularly so where the "Bundy" heater is used, in which the maker claims a higher efficiency, due to a radiating surface, as much in excess of absorbing surface as the difference in external and internal area of the brass tubes. It is a well-known fact that water is a most rapid absorbent of heat, and in evidence of this fact we call attention to the high temperature, often 210 degrees, attained by water in passing the heater, which had an initial temperature of 45 degrees. The influence this must have on the coal consumption is a foregone conclusion, and, it is claimed, instances are not rare where the fuel bill has been cut in half by their use.

The brass tubes are rigidly fixed in the lower flange placed between the heater and sediment chambers, but not in the upper flange between the water chambers.



BUNDY FEED-WATER HEATER.

bother with separate shaft stands to line up in locating the machine. The roll pinions are wide and cut out of the solid blanks; also the pulley-shaft pinions. Convenient to operate the machine by hand.

For further particulars address the makers, Messrs. Bertsch & Co., of Cambridge City, Ind.

Bundy Feed-Water Heater.

The "Bundy" feed-water heater is a device for heating water prior to its introduction in a boiler, and its chief fascination lies in the fact that the heat utilized is from a source of waste, namely, the heat that escapes from the engine with the exhaust steam. According to Daniel Kinnear Clarke, the celebrated English authority, the most economical multiple expansion engine known transforms into work only 18 per cent. of all the heat stored up in the steam leaving the boiler, thus leaving 82 per cent. wastage, a most fruitful source from which to obtain the heat for the feed water, and in a medium of such convenient form as to permit of the simple and inexpensive appliance here illustrated.

There are three main parts, namely,

This is to allow for expansion and contraction. The tubes are straight, to facilitate easy cleaning and to secure maximum life. The bending of tubes disturbs the fiber and weakens the construction, besides rendering it difficult if not impossible to clean. Proper provision is made for sediment and scum blow off, as well as exhaust condensation drip. The change of direction necessarily taken by the water upon entering the heater has a precipitating effect that is further favored by the vertical direction taken in passing through, while the water outlet starts from a point within the upper chamber that is as absolutely devoid of impurities that are lighter than water which escape through the scum blow off. The exhaust inlet and outlet are placed on the same or opposite sides, to suit the convenience of the purchaser.

This device is manufactured by the A. A. Griffing Iron Co., 66-68 Centre street, New York, which has distributing stores at Boston and Philadelphia. The works are at Jersey City, N. J. Book M. R. is sent upon request.

The annual convention of the National Association of Credit Men will be held in Detroit on June 22, 23 and 24.

Iron Markets.

Cincinnati, Ohio, May 28.

The principal trading in pig iron in the central district has centered in Detroit, where contracts for several thousand tons of Lake Superior charcoal, high silicon and Southern coke brands have been closed. Throughout the rest of this section orders have been for smaller quantities and mostly for early delivery.

A number of important deals are pending, and there will be a keen contest between Northern and Southern brands. The buyers claim they cannot afford to pay more for Southern than for Northern iron, but it is supposed they will buy some of each to obtain a satisfactory mixture.

With the exception of a few weak spots in the South, the situation is strong, and there is a growing feeling that consumption is adequate to take all iron likely to be produced. If the reports for May show a further decline in productions and stocks there will be an attempt to advance quotations.

We quote for cash f. o. b. Cincinnati:

Southern coke, No. 1 foundry	\$9 75@	\$10 00
Southern coke, No. 2 foundry	9 50@	9 75
Southern coke, No. 3 foundry	9 25@	9 45
Southern coke, No. 4 & G. F.	8 75@	9 00
Southern coke, mottled	8 75@	9 00
Southern coke, No. 1 soft	9 75@	10 00
Southern coke, No. 2 soft	9 50@	9 75
Belfont coke, No. 1, Lake Sup.	11 00@	11 50
Belfont coke, No. 2, Lake Sup.	10 50@	10 75
Hanging Rock charcoal, No. 1	14 50@	15 50
Tennessee charcoal, No. 1	12 50@	13 00
Jackson Co. silvery No. 1	12 00@	12 50
Standard Georgia car-wheel	14 25@	15 00

Philadelphia, Pa., May 28.

Our trade with Europe, notwithstanding the slight uncertainty caused by the trouble with Spain, seems to be promising. The Cramp shipbuilding firm of this city has received an order from the Russian government, which, it is stated, will keep them busy for a number of years. The Baldwin Works have a number of export orders to be executed for locomotives. The Brill Car Works are busy, partly with export orders for street-cars. In the Harrisburg district one furnace is running on a special kind of basic iron which is shipped to Germany. Alabama furnaces have recently received liberal export orders. There has been a fair inquiry for mill iron during the past ten days, indicating that some of the Eastern rolling mills expect to run during the summer months. The general situation is, if anything, more encouraging and the outlook better than it has been.

We quote for cash f. o. b. Philadelphia docks:

No. 1 X standard Alabama	—@	\$11 00
No. 2 X standard Alabama	—@	10 55
No. 1 X lake ore coke iron	—@	11 75
No. 2 X lake ore coke iron	—@	11 25
Lake Superior charcoal	—@	13 25
Standard Georgia C. C.	—@	15 50

New York, N. Y., May 28.

While sales of pig iron are not running in the East on as broad a scale as reported from the West, there is, nevertheless, a fair volume of business current, and furnaces tributary to this market are generally well sold up. Alabama iron finds more profitable markets elsewhere, and makers are indisposed to meet prices established by late sales of Virginia and nearby furnaces. The building trades in Eastern cities are not active, and complaint is heard from foundries dependent upon them. The late stringency in money is the explanation of this. The cause being removed, it is expected that building operations will slowly increase. The agricultural-implement business and other lines of manufacture dependent upon the farmers of the great West are not located to any extent in the East, and we fail to realize the unprecedented activity that is reported from Chicago and elsewhere.

Export trade, while not wholly at a standstill, is very nearly so, and little change is looked for in the early future. Ocean freights are still on an artificial

basis, and all business in American bottoms is practically suspended.

The significant feature of the whole business situation is the "grand confidence" in the business future of this country that pervades all circles. It is believed that the war scare will be of brief duration, and that it will set in force influences that will in the end have a marked effect in stimulating all American trade and industries. With the war over there would be a complete absence of the alarms and bugbears which have returned so persistently in the past five years whenever a little improvement was in sight.

We make no change in quotations.

We quote for cash f. o. b. New York:

No. 1 X standard Alabama	\$10 75@	11 00
No. 2 X standard Alabama	10 50@	10 75
No. 1 X lake ore coke iron	12 50@	12 75
No. 2 lake ore coke iron	12 00@	12 25
Niagara coke malleable	12 00@	12 25
Rome (Ga.) charcoal	15 00@	15 50
Hinkle L. S. charcoal	13 00@	13 50

Chicago, Ill., May 28.

The fact that for two weeks we have not found time to write a market report has not interfered with the pig-iron trade going merrily on, and a large tonnage during that period was booked.

A Kentucky furnace advanced their prices twenty-five cents per ton, and sales continue without interruption at the advanced price.

There have been rumors of a similar advance by Tennessee and Alabama furnaces, but up to the present writing no change has been made from the prices ruling heretofore. On account of the heavy tonnage booked for future deliveries, it would not be at all surprising if an advance should take place. The past week has been a rather quiet one, but this was to be expected, as heavy buying cannot continue always. Shipments continue heavy, and the general report is that our foundries are full of business, and that the consumption of iron throughout this section of the country never was so large as at the present time. The agricultural-implement manufacturers and the malleable-iron producers particularly are driven up to their full limit, and a little beyond.

We quote for cash f. o. b. Chicago:

Local coke foundry, No. 1	\$11 50@	12 00
Local coke foundry, No. 2	11 00@	11 50
Ohio Scotch, No. 1	12 00@	12 25
Ohio Scotch, No. 2	11 50@	11 75
Jackson Co., Ohio, silvery	12 50@	14 50
Southern coke, No. 1 foundry	10 85@	11 00
Southern coke, No. 2	10 35@	10 60
Southern coke, No. 3	10 10@	10 30
Southern coke, No. 1 S.	10 00@	11 00
Southern coke, No. 2 S.	10 35@	10 60
Southern silvers	11 25@	11 50
Tennessee charcoal softener	11 35@	11 80
Standard Georgia car wheel	14 00@	16 00
Lake Superior charcoal	12 00@	13 00

ROGERS, BROWN & CO.

Rates for Charters Decreasing.

The rates for ocean charters, which were placed at a very high figure at the beginning of the war, have been greatly reduced since vessel-owners realized the comparatively slight risk of interference with export business from either of the nations engaged. On May 1 large steamships for full cargoes of wheat and corn to Cork for orders were quoted at 5s. per quarter, which is equivalent to nearly sixteen cents per bushel from New York. Now, it is said, the same steamers would have difficulty in securing ten cents per bushel. Taking a grain steamship, 18,000 quarters, the difference between the rate quoted on May 1 and 3s. 1½d. would amount on a single voyage to \$6480. A number of steamships which were chartered at the high rates of a few weeks ago have been relet, their proposed cargoes have been resold and other steamships are in the market for recharter.

In the Journal of Commerce, of New York, of May 21, was an interesting article by Mr. Edward Atkinson, of Boston, on the subject of federal taxation.

CONSTRUCTION DEPARTMENT.

THE MANUFACTURERS' RECORD seeks to verify every item reported in its Construction Department by a full investigation and complete correspondence with everyone interested. But it is often impossible to do this before the item must be printed, or else lose its value as news. In such cases the statements are always made as "rumored" or "reported," and not as positive items of news. If our readers will note these points they will see the necessity of the discrimination, and they will avoid accepting as a certainty matters that we explicitly state are "reports" or "rumors" only. We are always glad to have our attention called to any errors that may occur.

*Means machinery, proposals or supplies are wanted, particulars of which will be found under head of "Machinery Wanted."

In correspondence relating to matters reported in this paper, it will be of advantage to all concerned if it is stated that the information was gained from the Manufacturers' Record.

It often occurs that the organization of a new company in any town is not known by the postmaster, and hence letters addressed to the company are returned marked "not known." The Manufacturers' Record reports the first organization of all companies, and our readers, in seeking to get into communication with them, should be very careful in deciding how to address them, and even then they must expect the return of some letters, because of the lack of knowledge on the part of postmasters of all new companies. Criticisms and complaints are invited, as they will the better enable us to guard against errors.

ALABAMA.

Birmingham—Steel Plant.—It is now stated that work will be commenced within ninety days on the construction of the \$1,000,000 steel plant which the Tennessee Coal, Iron & Railroad Co. has had in contemplation for several years and financial plans for which were noted last week to have been completed. Nat C. Baxter, Jr., president of the company, is credited with having made known the facts given.

Tuscaloosa—Coal Mines.—R. R. Stobert, of Pratt City, Ala., has purchased the Tidewater Coal Co.'s mines, etc., including 710 acres of land. The development of the property will be continued. Daily output of mines is at present 200 to 400 tons.

ARKANSAS.

Fordyce—Stave Mill.—The Hampton Stave Co., capital \$15,000, of which \$10,000 has been subscribed, has been incorporated by E. T. Collins, J. E. Hampton and G. M. Hampton.

Garland County—Whetstone-rock Mountain.—It is reported that the whetstone-rock mountain owned by C. S. Rogers and P. J. O'Brien, situated in Garland county, Arkansas, has been sold to a syndicate of St. Louis capitalists who intend to operate it and market the stone. It is estimated that many years will be consumed in developing this mountain. The St. Louis office of the developers will be at 1509 Chemical Building.

Little Rock—Lighting and Heating.—The People's Light & Heat Co., of Garland county, has filed articles of incorporation, with L. D. Cooper, president; W. H. Perry, J. R. Wood, S. H. Stitt, John G. Lonsdale and C. E. Harrell, directors; capital stock \$25,000. Address the president.

Little Rock—Construction Company.—Chartered: The Dewey Construction Co., capital \$10,000, of which \$7500 has been subscribed, by J. F. Lenon, J. E. Coates and E. E. Raines; object, to construct public or private works of any character, etc.

Little Rock—Cotton Mill.—The Thomas Cotton Mills has been incorporated, with capital stock of \$75,000, of which \$50,000 is paid in, by Dr. A. D. Thomas, Maxwell

Collin, O. H. Thomas, J. F. Lenon and J. A. Watkins. Company will operate mill already established.

Salem—Mining, etc.—Incorporated: The Fulton Real Estate & Mining Co., with a capital of \$6000, by B. H. Castleberry, S. L. Castleberry, W. A. Johns and L. A. Brittain, of Fulton county, and John B. McCaleb, of Sharp county.

GEORGIA.

Fitzgerald—Saw Mill.—The Hoffman Lumber & Manufacturing Co. has rebuilt its mill recently and will soon obtain location, with new timber for its mill; J. F. Hoffman, manager.*

Thomaston—Oil Mill.—R. A. Matthews contemplates the erection of a cottonseed-oil mill.*

KENTUCKY.

Cloverport—Electric-light and Water Works.—It is stated that a Louisville party will form a company to construct water works and erect electric-light plant in Cloverport.

Lawrenceburg—Electric-light Plant.—Geo. W. Dyre, of Princeton, Ky., has become interested in the proposed construction of electric-light plant in Lawrenceburg and may obtain franchise.

Louisville—Brewery.—Incorporated: The Union Brewing Co., by K. Weberpals, Chas. Metz, Louis Helitz, B. Huck, Xavier Hagenueller, John Wagner, James Delmez; K. Weberpals, president; Albert Schmitz, vice-president, and Charles Metz, secretary and treasurer. Capital is \$2500.

Williamsburg—Electric-light Plant and Water Works.—The city council is asking for propositions for franchise to construct water-works and electric-light plant. Address the mayor.

Winchester—Brick and Tile Works.—John Gaffney, of St. Louis, Mo., has purchased the Winchester Brick Co.'s plant; will remodel and improve same, put in new machinery, etc., and resume operations. It is stated that \$150,000 will be expended in modernizing the works.

LOUISIANA.

St. Francisville—Electric-light Plant.—Charles Weydert and Mr. Smith contemplate the installation of an electric-lighting plant.

MARYLAND.

Baltimore—Shoe Factory.—The Clement & Ball Manufacturing Co., for the purpose of manufacturing boots and shoes, has been incorporated by James Clement, Jacob Putzel, Harry H. Gontum, Alfred J. Kettle and George Ewalt, with a capital stock of \$50,000; company will succeed Messrs. Clement & Ball.

Baltimore—Water-power Development.—The Gwynn's Falls Power Co., capital stock \$100,000, has been incorporated by Joel C. Dumbracco, Edmund M. Hoffman, E. Scott Merryman, Philip H. Hoffman and John G. Westcott. The company is formed for the purpose of converting the water-power of Gwynn's Falls for manufacturing purposes. Address J. C. Dumbracco, Vansant Building.

Cambridge—Shoe Factory.—Chas. Helser, of Baltimore, contemplates establishing a shoe factory in Cambridge.

Centreville—Shirt Factory.—The Business Men's Association has completed arrangements for the establishment of a shirt factory.

Washington, D. C.—Bakery.—The Havenner Baking Co. will erect an addition to its steam bakery.

MISSISSIPPI.

Natchez—Brick Works.—The Natchez Brick & Manufacturing Co. has been fully organized recently and established a plant for the manufacture of building brick, etc.; R. E. Bost, president; R. L. Parker, vice-president; Dr. R. D. Watkins, secretary, and E. C. Edmiston, manager. The company will at once erect a second kiln of 250,000 capacity.

MISSOURI.

Carthage—Furniture Company.—Incorporated: The Mauley Furniture Co., capital stock \$3000, by M. E. Manley, C. I. Manley and L. E. Manley.

Pueblweg—Lead and Zinc Mining.—Ground & Irwin and L. H. Baker and Phil Chew, of St. Louis, have leased an 80-acre tract of lead and zinc land for development.

Eldorado Springs—Mineral Water.—Incor-

porated: The Eldorado Springs Mineral Water Co., with a capital stock of \$2100, by R. Adrich, R. M. Quigley and F. N. Hancock. Address F. N. Hancock.

Jasper County—Lead, Zinc and Copper Mines.—Incorporated: The Bartlett Mining Co., to mine zinc, lead and copper in Jasper county, Mo. The capital stock of the company is \$100,000. The incorporators are Morton McMichael, William T. Tiers, Joseph S. Neff and Frank F. Patterson, of Philadelphia, Pa., and John F. Jolino, of Camden, N. J. Address Mr. Patterson or Mr. Jolino.

Joplin—Lead and Zinc Mines.—James Luke and Frank Hill, of Carthage, Mo., have purchased an interest in an 80-acre tract of lead and zinc mines.

Kansas City—Grain Company.—Incorporated: The Purcell Grain Co., capital stock \$5000, by H. B. Hulett, C. V. and M. E. Purcell and K. Johnson. Address M. E. Purcell.

Poplar Bluff—Cooperage.—The H. D. Williams Cooperage Co., noted last week as incorporated, has purchased the plant of the Oxley Stave Co. and will continue the business on an enlarged scale. Extensive additions are being made to the cooperage, more than doubling the capacity of the barrel department. All contracts for machinery have been placed.

Poplar Bluff—Oil-well Supply Factory.—The Oil Well Supply Co., of Van Wert, O., will move its oil-well supply works to Poplar Bluff; contract for building 30x100 feet has been let to T. J. Siles & Son; will employ thirty men.

Princeton—Telephone Company.—Incorporated: The Missouri & Iowa Telephone Co., capital stock \$25,000, by J. S. Rogers, H. G. Orton, E. M. Hyde and others.

Princeton—Telephone Company.—Incorporated: The Winston Telephone Co., capital \$1000, by H. G. Orton, J. B. Hyde, C. P. Rogers and others.

Sedalia—Tobacco Factory.—The Herold Tobacco Co. has been organized, with capital stock of \$10,000, to manufacture smoking and twist tobacco; John N. Dalby, president; John W. Bowman and R. W. Griffith, vice-presidents; R. H. Moses, treasurer; E. A. Hill, secretary, and W. H. Hill, general manager.

St. Joseph—Mercantile.—Incorporated: The Spencer-Parry Grocer Co., capital stock \$200,000, by J. M. Frazer, G. G. Parry, H. L. Spencer and others.

St. Louis—Iron Works.—Incorporated: The Griffiths Iron Works Co., capital stock \$5000, by George, G. T. and Mary Griffiths.

St. Louis—Gold Mining.—Incorporated: The Yukon Prospecting & Gold Mining Co., capital stock \$14,000, by J. R. Strite, Morris Rich, J. W. Garneau and others.

St. Louis—Commission Company.—Incorporated: The Donovan Commission Co., capital stock \$40,000, by J. J. Mulholland, F. J. Miner, E. M. Donovan and others.

St. Louis—Heating.—Chartered: The Royal Heating Co., capital stock \$5000; incorporators, H. G. Hart, J. B. Rembrand, C. L. Plunkett and L. L. Rahner. Address H. G. Hart.

Sullivan—Woolen Mill.—Chartered: The Franklin Woolen Mills, capital stock \$4000, by Henry Lowenstein, S. R. Gordon and Henry Ashoff.

NORTH CAROLINA.

Charlotte—Machinery Company.—The Textile Specialty Co. has been organized by William Whittam, Jr., A. T. Atherton and Arthur Whitlam to deal in textile machinery.

Charlotte—Optical Company.—Incorporated: The Southern Optical Co., by Dr. W. H. Wakefield, Mary C. Wakefield and S. P. Peck. The capital stock is not to exceed \$25,000.

Granville County, etc.—Copper Mines.—The Boston & Carolina Copper Mining Co. will be organized, with capital stock of \$2,500,000, for the purpose of developing copper mines in Granville and Person counties, located on 1254 acres of land. Clarence C. Clark, of Malden, Mass., is president; Scott F. Bickford, vice-president; Charles M. Grose, treasurer; Rollin T. Lincoln, Brockton, Mass., secretary, and A. W. Graham, of Oxford, N. C., counsel. Messrs. Bickford & Richards, bankers, Boston, Mass., or A. W. Graham, Oxford, N. C., can be addressed.

Mebane—Furniture Factory.—Chartered:

The Melville Furniture Co., capital stock \$25,000, by W. E. White and others.

Mount Airy—Cotton Mill.—The Hamburg Cotton Mills contemplates adding twistlers and spoolers.

Newbern—Oil Mill and Fertilizer Factory.—The Newbern Cottonseed Oil and Fertilizer Mills has been organized, with a capital stock of \$25,000, and R. M. Broadus, president; C. L. Ives, vice-president, and T. G. Hyman, secretary-treasurer. The machinery for the new plant has been ordered and the company will be prepared to commence operations at the beginning of the next cotton season. Order for equipment of mill has been placed, excepting power plant.*

Plumtree—Mica Mining, etc.—The Brown Bros. Co., noted last week as incorporated, will continue the mica grinding (for wall paper) business of Brown Bros.; later the company will probably mine for mica also.

Rockingham—Water Works.—The construction of water works is proposed, water supply to be obtained from artesian wells or gang wells, former preferred; from 100,000 to 125,000 gallons per day would be wanted; bonds for the work will probably be issued; correspondence solicited from contractors and engineers; W. N. Everett, mayor.*

Rutherfordton—Cotton Mill.—M. Levi contemplates installing 2000 spindles in the mill building which he purchased recently.

Scotland Neck—Telephone Line.—The Scotland Neck Telephone Co. intends to extend its line to Hobgood.

Wilson—Saw Mill.—W. W. Shums & Co. will rebuild their saw mill that was burned recently.

SOUTH CAROLINA.

Branchville—Planing Mill.—A. S. Duke will put in new planer and matcher in six months.

Georgetown—Lumber Mills.—P. J. Doyle, H. J. Thicker, George A. Doyle and J. A. Thrall have formed the Winyah Lumber Co., with capital stock of \$20,000, for the manufacture of lumber, etc. The company has purchased the Pamlico Cypress Co.'s plant and will remodel and improve same, erect new saw mill of 50,000 feet daily capacity, etc.

Georgetown—Woodworking Factory.—Marks Moses has bought the Georgetown Kindling Wood Factory; will remodel, improve and operate same.

Rock Hill—Water Works.—The Rock Hill Water, Power & Light Co., recently organized, is applying to the city council for franchise for the establishment of water works and will probably be granted same; J. M. Cherry and R. T. Fewell, representatives of the company, can be addressed.

Westminster—Oil Mill and Ginnery.—The Carter Merchandise Co. will erect a cotton ginnery and cottonseed-oil mill.*

TENNESSEE.

Knoxville—Coal Mines.—It is stated that arrangements have been completed for the purchase of coal properties in upper Tennessee and Southern Kentucky by European capitalists who are represented by the Anglo-Indian Banking Co., of London. Maj. E. E. McCroskey, of Knoxville, Tenn., is said to represent the American parties to the deal. The capacity of the mines is estimated at 10,000 tons daily, employing about 4000 miners.

Lynnville—Telephone Franchise.—The town has granted franchise for telephone system and lines to the American Telephone & Telegraph Co.

Rogersville—Water Works.—The city will not build water works at present, as the election to vote upon issuing \$18,000 in bonds resulted adversely. Address the mayor.

Tellico Junction—Flour Mill.—Fred Pearce will build a 50-barrel roller-process flour mill.

TEXAS.

Austin—Cement.—The Austin Portland Cement Manufacturing Co., capital stock \$50,000, has been incorporated by Randolph Laurence, Emil G. Stolley, A. T. Rose and S. Silverman.

Bryan—Rubber-goods Factory.—Joe Groginski, M. Woolf and W. Endee, of Bryan, Texas; W. Endee, B. Cohen, C. Endel and S. Graneam, of New York; M. Paiski and B. Rosenberg, of New Orleans, La., will establish a factory for the production of rubber goods. Address Joe Groginski.

Dallas—Steel Tanks.—The E. O. Stanard Milling Co. will erect four steel tanks to have capacity of 100,000 bushels of grain.

Galveston—Mercantile.—Incorporated: The Peter Gengler Co., capital stock \$35,000, to do a general merchandise business; incorporators, J. L. Gengler, George D. Morgan and J. P. Alvey. Address J. L. Gengler.

Itasca—Flour Mill.—It is proposed to build a 50-barrel flour mill, and inducements are offered for its location. For information address John R. Griffin, cashier, First National Bank.

Pittsburg—Cotton, Woolen and Knitting Mill.—The Board of Trade has about completed arrangements for the establishment of a \$100,000 cotton, woolen and knitting mill.

San Antonio—Yard-stick Company.—Incorporated: The Calculating Yard Stick Co., capital stock \$20,000, by D. W. Shanks, Thomas J. Woody and B. H. Zuber.

VIRGINIA.

Norfolk—Sewerage System.—The election of Brambleton ward to vote on \$150,000 in bonds for sewerage system resulted adversely.

Richmond—Fertilizer Factory.—The Southern Fertilizer Works, which was recently organized, has decided to equip a plant at once, and is now preparing to place order for the machinery. Address company, P. O. Box 285.*

Richmond—Machinery Works and Depot.—The Virginia Manufacturing Co. has been incorporated, with capital stock of \$150,000, to conduct machinery works, deal in machinery, etc.; R. A. Lancaster, president; Wm. H. Lucke, secretary-treasurer; W. H. Palmer, Clay Drewry, R. A. Lancaster and Wm. H. Lucke, of Richmond, and Percy L. Block and J. E. Mastin, of New York, directors. The company succeeds Messrs. Talbott & Sons' Co.

Richmond—Mercantile.—The White Hardware Co., for conducting the wholesale and retail hardware business, with a capital stock of \$10,000, has been incorporated; president, James White; secretary, C. A. Mottley; treasurer, F. H. Jones; directors, the above and James T. Vaughan and J. Garland Pollard.

Staunton—Sanitarium, etc.—The Seawright Sanitarium & Hotel Co. will be organized, with capital stock of \$500,000, to develop certain mineral-water property, erect and conduct sanitarium, hotel, etc. For information address E. L. Edmondson.

WEST VIRGINIA.

Barnum—Coal Mining.—The Watson-Loy Coal Co., authorized capital \$30,000, has been incorporated by W. H. Loy, of Sins Run, Pa.; James C. Watson, Michael Mosteller, George M. Loy and Frank Trout, of Barnum. Address George M. Loy.

Bellington—Flour Mill.—C. H. Dent and R. E. Jackson have purchased the Bellington Flour Mill for \$2400 and will repair and operate same.

Benwood—Water Works.—Chartered: The Benwood Water Co., for the purpose of furnishing the city with water; subscribed capital, \$100,000; authorized capital, \$200,000. Incorporators, James Kinney, Jr., of Bellaire; Edwin W. Gearhart, of Lackawana; William D. Boner, of Scranton; Cecil A. Robinson, of Wheeling, and Hunt S. Armstrong, of Bellaire, Ohio.

Hamlin—Telephone System.—The Hamlin-Huntington Telephone Co., to erect and maintain telephone lines, has been incorporated, principal offices Hamlin, Lincoln county, with authorized capital of \$10,000, by R. B. Wilson, C. W. May, R. Sweetland, J. D. Porter, B. B. Curry, J. S. Sweetland, W. W. Baker, all of Hamlin, and J. A. Holly, of Charleston. Address R. B. Wilson.

Monongah—Coal Mining, etc.—The Highland Coal & Coke Co. has been chartered, with subscribed capital \$1000, authorized \$20,000; incorporators, A. J. Ruckman, J. H. Wheelwright, J. C. McKinley, S. A. Barnes and E. L. Caldwell. Address E. L. Caldwell.

Phillippi—Saw Mill.—Ellsworth Haller, H. F. Brohard and Edgar Douglas have purchased and will remodel the Douglas Mills.

Point Pleasant—Water Works.—Thomas A. Dun, of Scranton, Pa., will petition the town council for franchise to construct and operate water works.

Thurmond—Bridge.—The Thurmond Bridge Co. has been chartered for the purpose of building a bridge across New river, near Thurmond. Authorized capital is \$25,000; incorporators, Dr. W. H. Meyers, Meyersdale, Pa.; H. K. Black, Charleston; J. P. Chapman, Montgomery; Leo Shaffer,

Sewell, and S. G. Walker, Thurmond. Address the last-named.

BURNED.

Baltimore, Md.—Consolidated Railway Co.'s barn and 130 cars; loss, \$225,000.

Caledonia, Miss.—Cotton gin of Sam Walsh.

Franklin, N. C.—C. J. Harris's locust-pin mill; loss \$400.

Louisville, Ky.—T. P. Patchell's rope factory; loss \$3000.

Whitewright, Texas.—Whitewright Bottling Works; loss \$2500.

BUILDING NOTES.

Baltimore, Md.—Church.—The Baptist congregation may erect a church building. Address Rev. James A. Fletcher, pastor.

Baltimore, Md.—Store, etc.—Henry Brauns has made plans for store and dwelling, three stories, 21x83 feet, to cost \$10,000.

Baltimore, Md.—Asylum.—Egerton Female Orphan Asylum will erect a new building; W. W. Spence, president directors.

Brunswick, Md.—Municipal Building.—The city will vote in August upon issuing bonds for \$3500 to construct a municipal building. Address the mayor.

Cartersville, Ga.—Warehouse.—The Cartersville Warehouse Co. will build a warehouse; contract for erection awarded to J. E. Hall.

Carthage, Mo.—Residence.—Architect Buskley, of St. Louis, has completed plans for a residence for James Luke, of Carthage, to be of pressed brick and stone, 40x46 feet, cost \$12,000.

Chattanooga, Tenn.—Residence.—F. A. Gentry will erect a \$3500 residence.

Cordele, Ga.—Warehouse.—L. H. Webb and W. H. Liggins will erect a cotton warehouse 50x125 and 50x50 feet, etc.

Ellisville, Miss.—Hotel.—J. T. Gunter has let contract to Lindamod & Puckett for the erection of a three-story hotel building.

Grafton, W. Va.—School.—Contract for the erection of school building for St. Augustine's Church has been awarded to Fahy Bros., of Wheeling, at about \$13,000; plans by Franzheim, Glessey & Co., of Wheeling.

Huntington, W. Va.—The County Court has submitted a proposition to issue \$50,000 in bonds for the completion of the courthouse. Address the county clerk.

Kansas City, Mo.—Hall Building.—Contract has been awarded to G. K. Musselman at \$22,975 for the erection of a hall building.

Louisville, Ky.—Warehouse.—Samuel A. Hoffheimer will erect a distillery warehouse.

Louisville, Ky.—Stores.—Clark & Loomis are preparing plans for four storehouses for Bernheim Bros.

McMinnville, Tenn.—Church.—The Presbyterian congregation will build a church, as has been reported; structure to be of brick and cost about \$10,000. For information address R. M. Reams.

Raleigh, N. C.—Residence.—D. Getay & Co. have contract to erect residence for Ashley Horne, of Clayton, N. C.

Washington, D. C.—Dwellings.—J. H. Carnes will erect a brick and frame house, two stories high, shingle roof. Louis S. Shreeves will erect two-story dwelling, pressed brick, bay-window, etc. C. E. Burns will erect store and dwelling, two stories, two show-windows and bay-window. George F. Brown will erect two houses, two stories, pressed brick, bay-windows, etc.

Wilmington, N. C.—Residence.—W. L. De Rossett will erect a residence after plans and specifications by H. G. Bonitz.

Winfield, W. Va.—Hall.—Architect Fulk, of Charleston, W. Va., has prepared plans and specifications for hall building for J. Linders and others; bids will be wanted on erection.

RAILROAD CONSTRUCTION.

Railways.

Arcadia, La.—The Gulf, Louisiana & Great Northern Railroad Co. has established its headquarters at Arcadia. It is stated that the St. Louis Construction Co., general contractor for the line, is also here, and that work is to begin in a few days. The capital of the construction company is \$800,000. D. P. Alexander is president of the construction company.

Bolivar, Mo.—Tracklaying has begun upon the St. Louis, Osceola & Southern Railroad, and several miles have already been completed. George S. Goode & Co., at Bolivar,

are general contractors. It is to be forty miles long.

Buford, Ga.—The business men of the town have become interested in the proposition to build from Buford to the railroad between Logansville and Lawrenceville, now under construction. Subscriptions are being received to the stock of the company, and a charter has been applied for.

Chattanooga, Tenn.—In a letter to the Manufacturers' Record, J. W. Thomas, president of the Nashville, Chattanooga & St. Louis Railroad, states that the company has not decided as yet to build the branch to Chickamauga. If built the line will be six miles long. Mr. Thomas's address is at Nashville, Tenn.

Clarksville, Tenn.—It is again reported that arrangements are being completed for beginning work upon the Tennessee Central Railroad, and that operations will be commenced as soon as the war is at an end. Jere Baxter, of Nashville, Tenn., is president of the railroad company.

Cumberland, Md.—The Cumberland & Frostburg Railroad Co., is stated, has completed arrangements to build three miles of its trolley line at once. J. W. Burchinal, of Mountsville, W. Va., is the principal promoter of the enterprise.

Fayetteville, W. Va.—The Fayette Electric Railroad Co. has been chartered to build a road from Fayetteville to the town of Fayette. W. J. Simms and Morris Harvey are interested.

Frederick, Md.—The Frederick, Thurmont & Northern Railway Co. is perfecting plans for its electric line to Thurmont. L. Victor Baughman is president of the company.

Jonesboro, Ark.—The Jonesboro, Lake City & Eastern Railroad has increased its capital stock to \$225,000. It is understood that the increase is made in order to extend the line to Leachville, Ark., a distance of fifteen miles. A. J. Kerfoot is general manager of the company at Jonesboro, Ark.

Lenoir, N. C.—The Carolina & Northwestern Railroad Co. has graded the portion between Hickory and Newton, N. C., ten miles, and it is stated that rails are about to be laid. They have been bought. Messrs. J. R. Ervin & Co., of Hickory, it is stated are contractors for the work.

McDonald, W. Va.—The Sugar Creek Railroad Co. has been organized, with \$250,000 capital, to build a line from McDonald to Raleigh Courthouse. Among those interested are J. W. Davis and G. N. Davis, of Coffman, W. Va., and E. J. Fudge, of Chicago, Ill.

Middletown, Md.—It is reported that contracts have been awarded for building an extension of the Frederick & Middletown Electric Railway between Middletown and Myersville. The road is to be called the Catocin & Myersville Railroad, and will be three and one-half miles in length. Arthur L. Bosley, of Frederick, has the contract for the electric construction and equipment and F. S. Douglas, of Millersville, Pa., has the contract for grading.

New Orleans, La.—The Caffery Sugar Refining Co. will receive contract for grading and bridgework on four miles of the standard-gauge railroad in Iberia parish. H. Chapman, at New Orleans, is general manager.

Newport News, Va.—It is announced that surveys are to be made immediately for the proposed electric railroad between Newport News and Old Point Comfort which is being promoted by W. J. Payne and others, of Richmond.

Petersburg, Va.—It is stated that the promoters of the electric railroad between Richmond and Petersburg are endeavoring to secure a franchise in Chesterfield county. The line will be about twenty miles in length. Among those interested is Corbin Warwick, of Richmond.

Sapulpa, I. T.—It is stated about two-thirds of the line between Sapulpa and Oklahoma City has been graded. The road will be 108 miles in length and will connect with the St. Louis & San Francisco. C. G. Jones, of Oklahoma City, is one of the directors of the company. The contractors are Johnson Bros. & Faught, of St. Elmo, Ill.

Staunton, Va.—E. L. Edmondson, of the Seawright Magnesian Lithia Springs Co., writes the Manufacturers' Record that it is proposed to connect the company's property with some railroad line in the vicinity by an electric line.

Valdosta, Ga.—In a letter to the Manufacturers' Record Walton Ferguson, of 15 Wall street, New York, president of the Atlantic, Valdosta & Western Railroad, writes that the company does not contemplate making any extension beyond Valdosta, Ga.

West Point, Ga.—J. J. Hagedorn & Co., of West Point, who are promoting a railroad from Opelika, Ala., to Riverview, inform the Manufacturers' Record that surveys are now being completed for a line between Riverview and Columbus, Ga. The first plan was to build between Opelika and Riverview, but the extension to Columbus is more favorably regarded. It will be about thirty miles long, making a new line between West Point and Columbus in connection with the Chattahoochee Valley road.

Street Railways.

Vicksburg, Miss.—The Vicksburg Railroad & Power Co. has elected the following officers: President, J. C. Shaffer, of Chicago; vice-president, Percival Steele, of Chicago; secretary, M. J. Mulvihill, of Vicksburg; treasurer, B. W. Griffith, of Vicksburg. It is reported that President Shaffer is now in New York making arrangements to begin construction of the railway at once.

Washington, D. C.—The Capital Traction Co. has completed the work of changing its Seventh-street line from the cable system to that of an underground electric conduit.

Washington, D. C.—A bill is pending in Congress allowing the East Washington Heights Railway Co. to build its line in the western suburbs to connect with the Washington & Chesapeake Beach and the Washington & Marlboro roads. It will form a terminal railway for these lines when completed.

Wheeling, W. Va.—It is reported that the extension of the Wheeling Railway Co. will be built to the State Fair grounds, in the suburbs, and that right of way has been secured for it. W. S. Wright is manager of the company.

Machinery, Proposals and Supplies Wanted.

Manufacturers and others in need of machinery of any kind are requested to consult our advertising columns, and if they cannot find just what they wish, if they will send us particulars as to the kind of machinery needed we will make their wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. The MANUFACTURERS' RECORD has received during the week the following particulars as to machinery that is wanted.

Blowers and Elevator.—Box 174, Richmond, Va., wants a 76 to 90-inch blower and a 36-inch blower; also an elevator, 2500 to 3000 pounds capacity. Prefer power, but can use hand elevator; must be in good condition.

Boat Machinery.—See "Marine Machinery."

Boiler and Engine.—See "Steam-power Plant."

Boiler and Engine.—W. A. Deans's Sons, Goldsboro, N. C., want a six-horse-power engine and boiler, mounted on wheels; second-hand.

Boiler and Engine.—L. K. Overcast, Statesville, N. C., wants a good second-hand engine and boiler, from fifteen to twenty-five horse-power, to run saw mill.

Boiler and Engine.—Southern Fertilizer Works, P. O. Box 285, Richmond, Va., is in the market for 100-horse-power boiler and 75 to 100-horse-power engine. (See "Fertilizer Machinery.")

Cotton Compresses.—M. E. Thornton, Hickory, N. C., wants to correspond with constructors of cotton compresses.

Cotton Ginnery.—Carter Merchandise Co., Westminster, S. C., wants to correspond with dealers in and builders of machinery for complete cotton ginnery.

Electric-light Machinery.—Newberne Cotton Oil and Fertilizer Mills, Newberne, N. C., T. G. Hyman, secretary, is in the market for a 60-light dynamo; second-hand machine will answer purpose.

Elevator.—See "Blowers and Elevator."

Elevator.—The city council has authorized the inspector of buildings, Baltimore, Md., to expend \$10,000 on an elevator for the City Hall.

Engine.—Wanted—A good second-hand Corliss engine, about 250 horse-power; left hand. Address at once with particulars J. Allen Smith & Co., Knoxville, Tenn.

Fertilizer Machinery.—Southern Fertilizer Works, P. O. Box 285, Richmond, Va., is in the market for 100-horse-power boiler, 75 to

100-horse-power engine; new or good second-hand; fertilizer-mixing machinery, etc.

Grinding Machinery.—See "Meal Mill."

Heating, etc.—Bids will be opened June 8 for furnishing heating and ventilating apparatus for school building in city of Cumberland, Md. Plans can be seen in office of Jno. S. Siebert, Walsh Building. Address H. G. Weimer, secretary school board.

Machine Tools.—Harding Manufacturing Co., Nashville, Tenn., is in the market for 25-inch engine lathe; second-hand will do.

Machine Tools.—Charles Kaestner & Co., Chicago, Ill., are in the market for an 800-pound steam hammer, second-hand in good condition will do.

Magic-lantern Views.—Charlotte Wyatt, Faith, N. C., wants addresses of makers of views for magic lanterns.

Marine Machinery.—Oliver Oil Co., Tarboro, N. C., wants to buy machinery for stern paddle-wheel.

Meal Mill.—Price & Evans Manufacturing Co., Chattanooga, Tenn., is in the market for new or second-hand bone-meal machinery.

Office Dealers.—E. J. O'Connor, Augusta, Ga., wants to correspond with dealers in office.

Oil Mill.—R. A. Matthews, Thomaston, Ga., wants to buy complete equipment for cottonseed-oil mill; second-hand outfit wanted.

Oil Mill.—Carter Merchandise Co., Westminster, S. C., wants to correspond with builders of and dealers in machinery for cottonseed-oil mill.

Paper Boxes.—James H. McNeill, Mineral City, Va., wants addresses of manufacturers of paper boxes.

Printing and Book-making Machinery.—A. J. Showalter Co., Dallas, Texas, wants competitive bids for furnishing cylinder book press, Galley universal jobber, book trimmer, etc.

Pulleys.—Sydnor Pump & Well Co., Richmond, Va., is in the market for friction-clutch pulleys; catalogues and price-lists desired.

Railway Equipment.—Alexandria Lumber Co., Limited, F. F. Rogers, president, is in the market for a good second-hand Hessler or Shay locomotive, twenty-five to thirty tons weight.

Rice Machinery.—R. L. Kelsler, Lewisdale, S. C., wants to buy a small rice huller.

Roofing, etc.—Newberne Cotton Oil and Fertilizer Mills, T. G. Hyman, secretary, Newberne, N. C., is in the market for prices on roofing and ceiling (galvanized).

Saw Mill.—Hoffman Lumber & Manufacturing Co., Fitzgerald, Ga., wants prices on 35 or 40-horse-power saw mill complete.

Steam-power Plant.—Newberne Cotton Oil and Fertilizer Mills, Newberne, N. C., is in the market for a steam-power plant; T. G. Hyman, secretary.

Tin Cans.—Gray Bros., Fort Valley, Ga., are in the market for several carloads of tin fruit cans with large hole.

Water Works.—The city of Rockingham, N. C., proposes the construction of a water-works supply to come from either artesian wells or gang wells, artesian preferred; from 100,000 to 125,000 gallons would be required daily; correspondence solicited from engineers and contractors. Address W. N. Everett, mayor.

Woodworking Machinery.—Hicks & Allen, Louisburg, N. C., wants a planing machine for working flooring, ceiling, moldings, etc.

Woodworking Machinery.—Hoffman Lumber & Manufacturing Co., Fitzgerald, Ga., wants prices on planer and matcher, second-hand, and on a 35 or 40-horse-power saw mill complete.

Woodworking Machinery.—Gurney Manufacturing Co., Roan Mountain, Tenn., wants a lathe for turning handles; second-hand.

Woodworking Machinery.—C. A. Vance, Wise, Va., wants to buy a machine for manufacturing insulator pins and crossarms.

TRADE NOTES.

Textile Machinery.—The Millville Manufacturing Co., Millville, N. J., has placed a repeat order with the Saco and Pettie Machine Shops, of Newton Upper Falls, Mass., for revolving flat cards.

Knitting Machine Works.—The Excelsior Knitting Machine Manufacturing Co., which has been located in South Bethlehem, Pa., for the past five years, has removed to Allentown, Pa., where a new shop has been fully equipped which gives largely-increased facilities. The company is now better prepared to care for the wants of knitting

mills, with its improved automatic % knitting machines, than ever before.

"Remember the Maine."—A neat paper-weight and very appropriate in the present martial time has been introduced by the Ludlow-Saylor Wire Co., of St. Louis, Mo. The article is a bronze casting, highly polished, and, besides making a very useful desk ornament, is calculated to keep alive the patriotism of the people. The weight represents a cannon resting on a carriage, on which is the legend "Remember the Maine," together with the United States shield.

Recommending Buffalo Blowers, etc.—Letters from blacksmiths and other users of blowers and forges are constantly being received by the Buffalo Forge Co., of Buffalo, N. Y., manufacturer of steam hot-blast apparatus, cupola and forge blowers, etc. The letters received invariably speak in highly commendatory terms of the "Buffalo" hand blowers, "Boston" blowers, forges, etc. Extracts from the letters mentioned show that the tools and apparatus produced by the Buffalo Forge Co. are properly designed and constructed of high-grade materials by high-grade workmen.

TRADE LITERATURE.

Woodworking Machinery.—Catalogue "A" of the Trevor Manufacturing Co., of Lockport, N. Y., contains illustrated descriptions of the extensive line of machinery built by this company. The line includes machinery for the production of shingles, heading, staves, basket and crate stock, handles and veneering.

Foundry Supplies.—Stimulated by the general revival of activity in the iron industry, there has been issued by the S. Obermayer Co., of Cincinnati, O., an entirely new and descriptive catalogue of all articles needed in a modern iron and brass foundry. Foundry facings, foundry equipments, foundry supplies, etc., are found represented and quoted in the present catalogue, and it should be in the hands of all operators of foundries. The Obermayer Company also imports and refines East India plumbago and silver lead, claiming to be the most extensive handler of such goods in the United States.

Greene-Wheelock Engine.—A catalogue that should prove of much interest to present and prospective users of steam-power has been issued descriptive and illustrative of the Greene-Wheelock engine. This catalogue shows the latest Greene-Wheelock engine, with "Hill" valve gear, and gives a summary of a few tests, every one of which is claimed to be world's record under the existing conditions. This engine is built by the American Wheelock Engine Co., of Worcester, Mass., which constructs engines of any capacity and for any service, with a specialty of high-duty engines and complete power plants of guaranteed high efficiency. The catalogue is sent free on application.

Alleged Infringement of a Certain Feature of Milling Machinery.—It is possible that the litigation relating to milling machinery may be varied somewhat from its usual course by proceedings having reference to the construction of grinding mills and the alleged infringement of a certain feature claimed to be covered by patent. This feature is the ball-bearing on the end of the mill spindles of some vertical mills. Messrs. Sprout, Waldron & Co., of Muncy, Pa., claim this feature and have notified the trade that no ball-bearing can be successfully used at the end of the spindle without infringing their patent, No. 417,760, dated December 24, 1889. The specific claim which is alleged to be infringed by some manufacturers is described in a circular now ready. Messrs. Sprout, Waldron & Co. announce that they have never disposed of the right to manufacture, and that the patent is fully vested in themselves.

"Bundy" Oil Separator.—Mr. P. Schauer, an engineer of Berlin, had long debated within himself as to what sort of a device he should procure for removing the cylinder oil from exhaust steam, as, being of an economical turn of mind, he desired to utilize in a practical way the enormous quantities of condensation produced by the exhaust line, but dared not do so on account of jeopardizing his boiler through the presence of oil in the water. While in this quandary he received a visit from the German agent of the A. A. Griffing Iron Co., who placed before him a descriptive circular and a portion of a baffle plate taken from a "Bundy" oil separator, illustrating the system of capillary extraction for removing oil from exhaust steam. Mr. Schauer's practical eye

FINANCIAL NEWS.

The Manufacturers' Record invites information about Southern financial matters, items of news about new institutions, dividends declared, securities to be issued, openings for new banks, and general discussions of financial subjects bearing upon Southern matters.

New Corporations.

Percy Whildon, of Bessemer, Ala., it is announced, intends opening a private banking house in that city.

P. J. King, G. C. Wright and others have formed the Metropolitan Savings Co. at New Orleans, La., with \$50,000 capital.

A certificate of incorporation has been issued to the Bank of Moriah, Mo., with capital stock \$10,000. Incorporators are T. F. Gray, N. N. Sloughton, L. H. Russell and others.

The Masonic Life Insurance Co. of America has been formed in Arkansas, with Governor Dan W. Jones, president; T. E. Little, treasurer; John B. Cowpland, secretary; W. S. Mitchell, chairman of the executive committee. Capital stock, \$1,000,000. The main office of the company will probably be at Little Rock.

New Securities.

The city of Cumberland, Md., has accepted the bid of the German Savings Bank of Baltimore for the \$20,000 issue of electric-light bonds at 101.06.

The County Court of Cabell County, West Virginia, has decided in favor of an election to vote on an issue of \$50,000 in 5 per cent. bonds for improvement purposes. T. S. Scannon, of Huntington, W. Va., is one of the committee in charge.

Messrs. Stanwood & Co., of Boston, Mass., have purchased the issue of \$30,000 of 5 per cent. bonds of Annapolis, Md., at a premium of \$3410. Bids were received from investors in New York, Cincinnati and Baltimore, besides Boston.

Dividends and Interest.

The Bonsack Machine Co., of Lynchburg, Va., has declared a dividend of \$12 per share.

The Virginia-Carolina Chemical Co., of Richmond, Va., has declared a dividend of 1 per cent.

Financial Notes.

The stockholders of the Louisville City National Bank have decided on the reduction of the capital stock from \$400,000 to \$200,000.

The Columbus Investment Co., of Columbus, Ga., has elected as president John F. Flournoy; vice-president, N. P. Banks; secretary and treasurer, C. M. Woolfolk.

readily recognized the value of the article, and he at once placed his order for an eight-inch "Bundy" oil separator, which is now being prepared for shipment by the maker. The A. A. Griffing Iron Co. (of Jersey City, N. J.) has issued a book containing a full line of descriptive illustrations and many valuable hints regarding the application and benefits to be derived from the use of its steam and oil separators, which will be sent to anyone applying.

Literary Notes.

Poole Bros.' Mining Directory and Reference Book of the United States, Canada and Mexico, etc. 900 pages. Price, delivered in the countries treated, \$6; in other countries, £1 5s. Messrs. Poole Bros., publishers, Chicago, Ill.

In this edition of the Mining Directory the publishers have endeavored to present the most extensive and reliable information obtainable concerning the mines, quarries, etc., of the United States, Canada and Mexico. The mining laws of the different countries and States have been

TABLE OF CONTENTS.

EDITORIAL:	Page.
Railroads as Developers.....	307
A Danger and How to Avoid It.....	307
A Good Habit.....	307
Out of Evil Good May Come.....	307
Improvement in Cotton Handling.....	308
The South's Export Trade.....	308
Machinery the Arbiter.....	308
In Spite of War.....	308
Convinced the Glinners.....	309
Industrial News from Birmingham.....	309
Reported as Sold.....	309
Mineral Production of the United States	
In 1897.....	309
The New Financial Measure.....	309
RAILROAD NEWS:	
Railways in the Southwest.....	310
Southern Pacific Branches.....	310
Columbus to West Point.....	310
Coal and Coke Shipments.....	310
Large Coal Cars.....	310
Important Improvement.....	310
A Liberal Policy.....	310
Increase in Earnings.....	311
Railroad Notes.....	311
TEXTILES:	
A Fight for Self-Preservation at the	
Expense of Cotton-Growers.....	311
To Issue Bonds for \$125,000.....	311
The Cotton Movement.....	311
Textile Notes.....	311
Large Freight Carrier.....	311
COTTONSEED OIL:	
The Market for Cottonseed Products..	312
Oil-Mill Superintendents.....	312
Large Sugar Mills for St. Bernard	
Parish, Louisiana.....	312
PHOSPHATES:	
Phosphate Markets.....	312
Phosphate and Fertilizer Notes.....	312
Jottings at the Ports.....	312
LUMBER:	
Lumber Market Reviews:	
Baltimore.....	313
Savannah.....	313
Mobile.....	313
St. Louis.....	313
Lumber Notes.....	313
The Right Course.....	313
MECHANICAL:	
Attrition Grinding Mill (illus.).....	314
Hollow Drills and Oil-Tube Drills (ill.)	
Improved Crimpers (illus.).....	314
Bundy Feed-Water Heater (illus.).....	315
Iron Markets.....	315
Rates for Charters Decreasing.....	315
CONSTRUCTION DEPARTMENT:	
New Enterprises.....	316
Building Notes.....	317
Railroad Construction.....	317
Machinery Wanted.....	317
Trade Notes.....	318
Trade Literature.....	318
FINANCIAL NEWS:	
New Corporations.....	318
New Securities.....	318
Dividends and Interest.....	318
Financial Notes.....	318
Literary Notes.....	318

carefully compiled by well-known resident attorneys. The list of rolling mills, steel and iron works will be found especially valuable. Referring to the Klondike region, Messrs. Poole Bros. say that authentic reports from that district will be awaited with interest, as yet there having been none that are sufficiently accurate to warrant publication in the directory. The map of Alaska accompanying the directory will be found of much interest, containing, as it does, the best information to date. The lists given in the Mining Directory give, to speak more fully, mining and quarrying companies and operators, smelters, reduction and sampling works, blast furnaces, rolling mills, iron and steel works, with location of each, names of officers, annual output, stamp mills, coal breakers and washers, coke ovens, etc., with the railways and water routes and express companies to all points at which above interests are located, or nearest shipping point. Also are given lists of mining, mechanical and electrical engineers, assayers, geologists, metallurgists, mine inspectors, mineral land surveyors, brokers, promoters, mining exchanges and investment companies.

Hambleton & Co.**Bankers and Brokers,**

Members New York and Baltimore Stock Exchanges.

9 South Street, BALTIMORE.

High-grade Investment Bonds, Municipal, Railway, Industrial.
Letters of Credit Available Everywhere.

Altogether, this volume is fully up to the standard which the Poole Bros.' Directory has always attained, as evidenced by the wide favor with which each new edition has been received.

"Torpedoes and Torpedo-Boats" is the subject of the leading paper in the June number of Frank Leslie's Popular Monthly. B. B. Croffut tells the history and progress of these little engines of destruction, and describes their manufacture, cost and manipulation. The article would be interesting at any time, and is particularly so just now. It is liberally illustrated with views of short and long torpedoes, the principal torpedo-boats of this and other countries, and interiors of a torpedo factory. Another

timely article is one on "The Naval Militia," by Charles Sydney Clark, which describes the work and duties of this excellent auxiliary arm of our navy. The illustrations include portraits and groups, and views of some of the vessels manned by the naval militia. "The Working of a Modern Mine," by James Harold Thompson, tells of the life of the miners at work, and is well illustrated. The article on Andrew Jackson this month is by Old Hickory's grandson, Col. Andrew Jackson, and gives some recollections of the general's home life.

TO CONTRACTORS.

If you have any municipal bonds or warrants, taken in payment for building waterworks, court or school houses, jails, etc., write us. Conditions being favorable, we can use them.

F. M. STAFFORD & CO.

Dealers in Southern Municipal Securities, Chattanooga, Tenn.

JOHN L. WILLIAMS & SONS, BANKERS,

Dealers in RICHMOND, VA.

Southern Investment Securities,
MUNICIPAL BONDS A SPECIALTY.
Correspondence Invited.

J. WM. MIDDENDORF.

Members Baltimore Stock Exchange.

WM. B. OLIVER.

MIDDENDORF, OLIVER & CO.**BANKERS AND BROKERS,**

No. 213 E. German Street,

[KEYSER BUILDING.]

Baltimore, Md.

Stocks and Bonds Bought and Sold on Commission. Special attention given to Municipal and other Investment Loans. Dealers in Foreign Exchange. Drafts on Europe and Letters of Credit furnished.

MARYLAND TRUST CO.Corner South and German Sts.,
BALTIMORE.**CAPITAL, - - \$1,000,000.00**
SURPLUS, - - - 500,000.00**A LEGAL DEPOSITORY FOR COURT AND TRUST FUNDS.**

Acts as Financial Agent for States, Cities, Towns, Railroads and other Corporations. Transacts a general trust business. Lends money on approved security. Allows interest on special deposits. Acts as Trustee under Mortgages, Assignments and Deeds of Trust; as Agent for the Transfer or Registration of Stocks and Bonds, and for the payment of coupons, interest and dividends.

J. WILLCOX BROWN, PRESIDENT.**LLOYD L. JACKSON, FIRST VICE-PRES.****HENRY J. BOWDOIN, SECOND VICE-PRES.****J. BERNARD SCOTT, Secretary and Treasurer.****DIRECTORS:**

J. Willcox Brown, Leopold Strouse,
Wm. A. Marburg, Henry Walters,
Basil B. Gordon, H. A. Farr,
Lloyd L. Jackson, B. N. Baker,
Geo. A. von Lingen, Andrew D. Jones,
H. J. Bowdoin, James Bond,
Joshua Levering, Alexander Brown,
Frank Brown, John A. Tompkins,
W. B. Brooks, Jr., Clayton C. Hall,
W. H. Baldwin, J. D. Baker,
Fred'k W. Wood, Joseph E. Willard,
F. M. Thieriot, John B. Garrett,

Maryland Casualty Co.Keyser Building,
Calvert and German Streets,
BALTIMORE.

The Only Company of its kind in Maryland or the South.

Cash Capital, - - \$250,000
Cash Surplus, - - - 100,000

Inspects and Insures Boilers and Elevators.
Insures Plate Glass.
Issues all forms of Accident and Liability Policies.

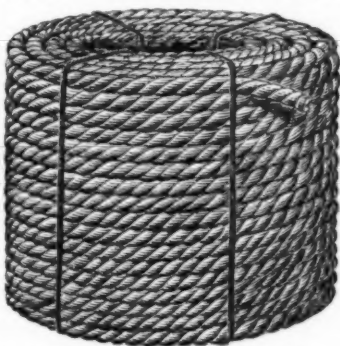
Managed and Superintended by Trained and Experienced Men.

YOUR BUSINESS SOLICITED.**OFFICERS:**

JOHN T. STONE, President.
AUBREY PEARRE, Vice President.
ROBT. N. ELDER, Jr., Secretary.
JOSEPH WALTER, Treasurer and Local Supt.
JOSEPH G. CLOUD, Supt. of Agencies.
MARBURY & BOWDOIN, General Counsel.

DIRECTORS:

Wilmer Brinton, John M. Hood,
Alexander Brown, George C. Jenkins,
Henry J. Bowdoin, Lloyd L. Jackson,
Daniel E. Conklin, J. W. Middendorf,
Charles H. Dickey, Seymour Mandelbaum,
Louis F. Detrick, Aubrey Pearre,
Wm. J. Donnelly, George A. Pope,
Emanuel Greenbaum, Simon Rosenberg,
Jackson C. Gott, Ernst Schmeisser,
W. H. Gorman, John T. Stone,
Douglas H. Gordon, Charles J. Taylor,
Louis K. Gutman, J. Skelton Williams,
George R. Webb.

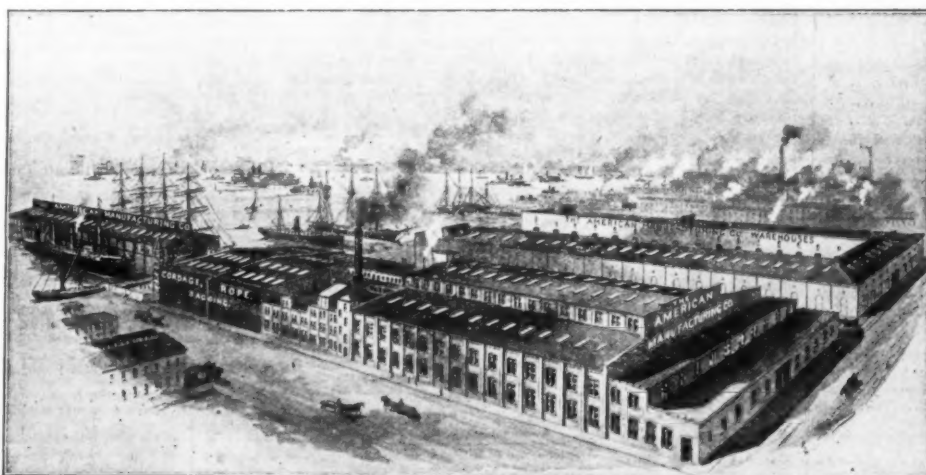
AGENTS EVERYWHERE.**The American Manufacturing Co.****Main Office:**

67 Wall Street, New York.

Mills:

West, Milton, Noble and Oak Streets, Greenpoint, Brooklyn.

MANUFACTURERS OF

CORDAGE

The QUALITY of Our Rope is Our FIRST Consideration, the Cost is Secondary.

Send for Information About Transmission Rope.

Ours is the Best Made.**North American Trust Company****NEW YORK: 100 BROADWAY. LONDON: 95 GRESHAM ST.****Capital paid up....\$1,000,000**
Surplus.....\$200,000

Transacts a general trust business.
Allows liberal rates of interest on deposits and trust funds.

Issues Letters of Credit and Travelers' Circular Notes payable in dollars or in the money of any foreign country.

Acts as Trustee under mortgages for railway and other companies, and as Agent for the Registration of the stock, and for the transfer of the shares of incorporated companies.

Undertakes the examination of properties offered as security for bond issues, and the obtaining of expert information concerning the actual facts and prospects of reorganization proposals.

Qualified and empowered to act as executor, administrator, trustee, guardian, and assignee, and as receiver and custodian of funds under orders of Court.

OFFICERS:

W. L. TRENHOLM.....President
SAMUEL M. JARVIS.....Vice-Presidents
ROLAND R. CONKLIN.....Vice-Presidents
JAMES DUANE LIVINGSTON.....Trust Officer
S. L. CONKLIN.....Secretary
F. C. PREST.....Assistant Secretary
S. R. HERBERT.....London Secretary
E. J. CHAPPELL.....London Treasurer

DIRECTORS:

Hon. JOHN G. CARLISLE,
Former Secretary of the Treasury of the U. S.
ROLAND R. CONKLIN,
Vice-President of the North American Trust Co.
S. L. CONKLIN,
Secretary of the North American Trust Co.
C. W. DRAKE,
Treasurer of the Rio Grande Western Rwy Co.
SAMUEL M. JARVIS,
Vice-President of the North American Trust Co.
Hon. ADLAI E. STEVENSON,
Ex-Vice-President of the United States.
WAGERSWAYNE,
Of Messrs. Swayne & Swayne, Counselors-at-Law.
Hon. W. L. TRENHOLM,
Former Comptroller of the Currency of the U. S.

Mercantile Trust & Deposit Co.

OF BALTIMORE.

Paid-up Capital, \$1,000,000.
Surplus, \$1,000,000.

DEPOSITS RECEIVED
On which interest is allowed, governed by current rates obtainable.

TRUSTEES AND ADMINISTRATORS.
This company is a Legal Depository for funds in the hands of Trustees or Administrators, and allows interest on same pending distribution.

Authorized to act as Executor, Administrator, Guardian, Receiver or Trustee.

ACTS as Trustee of Mortgages of Corporations and accepts Transfer Agency and Registry of Stocks.

Safe Deposit Boxes for Rent.
Vaults supplied for Storage of Silver Chests, etc.

JOHN GILL, of R., President.

Alphabetical Index of Advertisers.

For "Classified Index" see pages 3, 5 and 7.

A	Adams, Robert Franklin	35	Chattanooga Machinery Co.	26	Grasty, Robt. Ware	25	M. F.	26	Schneider & Trenkamp Co.	8
Aerostatic Power Co.	24	Chesapeake Belting Co.	*	Gregory Co., Chas. E.	26	Middendorf, Oliver & Co.	319	Schneider Mfg. Co.	46	
Aetna Standard Iron & Steel Co.	42	Chester Steel Castings Co.	13	Griffing, A. A., Iron Co.	4	Middletown Machine Co.	18	Scott & Williams	36	
Alabama Bridge & Boiler Co.	9	Chicago Belting Co.	11	Grosche, L., Art Glass Works.	32	Milburn, Frank P.	6	Scranton Corundum & Emery		
Alabama Foundry & Machine Wks.	25	Christiana Machine Co.	41	Guilfoix & Blanc	6	Miles, Franklin S.	24	Wheel Works	13	
Albany Steam Trap Co.	9	Chrome Steel Works.	13			Miller Bros. & Co.	6	Seidel, R. B.	4	
Alber & Byrne	6	Cincinnati Corrugating Co.	33	H		Mitchell Tempered Copper Co.	45	Seidel, R. D.	46	
Albro, E. D., Co.	27	Cin., Hamilton & Dayton R. R.	39	Haines, Jones & Cadbury Co.	46	Mitshkun, M., & Co.	26	Simpson, H. P.	46	
Alexander Bros.	10	Cincinnati Safe & Lock Co.	46	Haines, William S., Co.	4	More, Jones & Co.	9	Simpson, J. S. & G. F.	20	
Alford, A. G., Sporting Goods Co.	37	Clark, W. J., Co.	35	Hales & Ballinger	6	Morgan Spring Co.	10	Sinclair, S. H., Co.	23	
Alpha Paint & Mineral Co.	24	Clayton Air Compressor Works.	46	Hall Steam Pump Co.	40	Morse Elevator Works.	12	Situations Wanted.	24	
Aising, J. R., Co.	20	Cleveland, Lorain & Wheeling Ry.	39	Hambleton & Co.	319	Morse Twist Drill & Mch. Co.	22	Skinner Chuck Co.	24	
American Balance Slide Valve Co.	22	Cleveland Wire Spring Co.	10	Hammacher, Schlemmer & Co.	12	Mueller, H., Mfg. Co.	9	Slatington-Bangor Slate Syndicate.	46	
American Cotton Oil Co.	38	Climax Mfg. Co.	13	Hanahan, J. Ross	6	Muirhead, John, & Sons.	*	Smethurst & Allen	45	
American Diamond Rock Drill Co.	30	Coburn Trolley Track Mfg. Co.	27	Hansell Spring Co.	13	Muirhead Machine Works.	19	Smith-Courtney Co.	17	
American Engine Co.	15	Cohoes Iron Fdy. & Mch. Co.	34	Hanson & Van Winkle Co.	45	Mundi & Sons.	21	Smith, H. B., Machine Co.	28	
American Impulse Wheel Co. of N.Y.	41	Columbia Water Power Co.	25	Harrington & King Perforat'g Co.	4	Munsou Bros.	42	Smith, S. Morgan, Co.	41	
American Mfg. Co.	319	Columbus (Ga.) Board of Trade.	24	Hartford Mfg. & Boiler Co.	18	Murphy, John, & Co.	9	Snow Steam Pump Works.	40	
American Ship Windlass Co.	39	Columbus Machine Co.	30	Hartford Steam Boiler Inspection		Murray Iron Works Co.	14	South Bend Spark Arrester Co.	36	
American Steel & Wire Co.	39	Commercial Electric Co.	45	& Insurance Co.	37	Murray, James, & Son	19	South Eastern Lime & Cement Co.	6	
American Stoker Co.	17	Commercial Wood & Cement Co.	6	Hartley's Boiler Works.	18			Southern Expanded Metal Co.	33	
American Supply Co.	35	Conard, Thos. P.	26	Hartzell Novelty Works.	23	N		Southern Fdry. & Mch. Works.	25	
American Tool Works Co.	13	Contractors' Plant Mfg. Co., Ltd.	43	Hayden, J. M., & Co.	10	National Paint Works.	31	Southern Iron & Equipment Co.	26	
American Woodworking Mch. Co.	28	Corbett Mill Supply Co.	6	Hazard Mfg. Co.	43	National Pipe Bending Co.	17	Southern Railway Co.	25	
Ames Iron Works.	14	Corbett Mill Supply Co.	6	Help Wanted.	24	National Roofing & Supply Co.	33	Spear's, Alden, Sons & Co.	31	
Anderson Water, Lt. & Power Co.	26	Cordesman Machine Co.	28	Hench & Dromgold.	27	New Atlantic Hotel.	39	Springfield Gas Engine Co.	18	
Andrews, A. H., & Co.	28	Cordesman, Meyer & Co.	28	Hendrick Mfg. Co., Limited.	30	Newburg Ice Mch. & Engine Co.	16	Sprout, Waldron & Co.	19	
Andrews, Perry, & Bro.	40	Corlias	26	Heyward, Julius H.	25	New England Railroad.	39	Stafford, F. M., & Co.	319	
Apollo Iron & Steel Co.	22	Cornman Co.	26	Hickman, Williams & Co.	25	N. J. Car Spring & Rubber Co.	11	Standard Coal Co.	39	
Armitage Mfg. Co.	33	Cortright Metal Roofing Co.	33	Hiertz, Theo., & Son.	4	New Jersey Zinc Co.	31	Standard Paint Co.	33	
Atkins, E. C., & Co.	29	Covert Mfg. Co.	31	High Point Machine Works.	14	Newport News Shipbuilding & Dry		Standard Saw Mill Machinery Co.	27	
Atlanta Envelope Co.	23	Cox, Justice, Jr.	31	Hill & Howard	6	Dock Co.	8	Standard Scale & Supply Co., Ltd.	23	
Atlanta Terra Cotta Co.	24	Crompton & Knowles Loom Wks.	4	Hirsch, L. K.	26	New York Equipment Co.	26	Stanley Electric Mfg. Co.	44	
B		Cronk Hanger Co.	27	Holmes, E. & B., Machinery Co.	28	Niagara Machine & Tool Works.	*	Starr, B. F., & Co.	42	
Baer, Richard P., & Co.	27	Crosby Steam Gage & Valve Co.	17	Holmes Fibre Graphite Mfg. Co.	*	Nicholson File Co.	20	Stebbins, Wallace.	18	
Bailey-Leboy Co.	20	Crouse-Hinds Electric Co.	45	Holt, S. L., & Co.	26	Nordyke & Marmon Co.	20	Steel Rail Supply Co.	26	
Bailey, John T., & Co.	22	Curtis & Marble Machine Co.	35	Homer, F. E., & Co.	45	Norrich, Burnham & Co.	41	Steele, J. C., & Sons.	20	
Baldwin Locomotive Works.	13	Cutler Mfg. Co.	9	Hoopes & Townsend.	27	North American Metaline Co.	43	Sterling Emery Wheel Mfg. Co.	9	
Ball Engine Co.	9	D		Howes, S., Co.	9	North American Trust Co.	319	Stevens, H., Sons Co.	46	
Baltimore, Chesapeake & Richmond		Dallett & Co.	26	Huger, Wm. E.	24	Northern Electrical Mfg. Co.	45	Stewart, James & Co.	6	
Steamboat Co.	39	Davis Coal & Coke Co.	38	Huther Bros.	28	Norton, C. H.	6	Stiles, E. S., Press Co., The.	30	
Baltimore Engraving Co.	39	Davis, Franklin F.	27	I		Norton Emery Wheel Co.	13	Stillwell-Bierce & Smith-Vaile Co.	38	
Baltimore & Ohio R. R.	39	Davis, G. M., & Son.	9	India Alkali Works.	36	O		Struthers, Wells & Co.	15	
Baltimore Steam Packet Co.	39	Dean Bros. Steam Pump Works.	40	Ingersoll-Sergeant Drill Co.	22	Ober Lathe Co.	27	Stuebner, G. L., Iron Works.	18	
Baltimore Storage & Light Co.	39	De Camp, J. I.	24	International Corres. Schools.	6	Otto Gas Engine Works.	16	Sturtevant, B. F., Co.	35	
Barber Asphalt Paving Co.	23	Dempwolf, C. H., & Co.	19	Interstate Law Association.	25	P		Sturtevant Mill Co.	20	
Barues, W. F., & John, Co.	12	Dessau, S., Co.	19	J		Pancoast, Henry B., & Co.	38	Sullivan Machinery Co.	19	
Barnes Bros.	24	Detroit & Cleveland Steam Nav. Co.	39	Jackson Mfg. Co.	4	Parkhurst Bros. & Co.	24	T		
Barnett, G. & H., Co.	46	Detroit Lubricator Co.	18	Janney & Steinmets.	31	Paxson, J. W., Co.	22	Tamograph Co.	12	
Barr, J. E.	23	Dexter, Parkman.	24	Jeanesville Iron Works Co.	41	Peacock, Geo.	23	Tanite Co.	46	
Bates', James, Sons.	24	Dixon, Jos., Crucible Co.	46	Jefferson, Edward, & Bro.	26	Peck-Hammond Co.	*	Taylor, A. W., Land & Lumber Co.	25	
Beach, H. L.	28	Dixon, Jos., Crucible Co.	46	Jeffrey Mfg. Co.	10	Penberthy Injector Co.	8	Taylor, James Knox.	23	
Beckley, A. J., & Co.	20	Dopp, H. Wm., & Son.	22	Jenkins Bros.	46	Pette Machine Works.	35	Thayer, J. A., & Co.	25	
Beechwood Chemical Co.	*	Dow Wire Works Co.	32	Jenkins & Lingle.	30	Phila. Machine Screw Works.	33	Thompson & Bushnell.	8	
Benjamin Iron & Steel Co.	26	Draper Co.	34	Jewell Belting Co.	11	Philadelphia Steel Roofing Co.	33	Toledo Machine & Tool Co.	32	
Berryman, James.	*	Draper Machine Tool Co.	12	Johns, H. W., Mfg. Co.	33	Pierce, George M.	30	Toomey, Frank.	26	
Bertsch & Co.	26	Dufur & Co.	12	Johnston & Nelson.	24	Pittsburg Feed-Water Heater &		Tower & Wallace.	6	
Besly, C. H., & Co.	46	Dunbar, R., & Son.	19	K		Pittsburg Locomotive Works.	17	Trenton Iron Co.	43	
Bird, Wm. M., & Co.	6	Dunning, W. D.	23	Keeler, E., Co.	18	Pittsburgh Plate Glass Co.	33	Trevor Mfg. Co.	28	
Birmingham Boiler Works.	9	E		Kelly, O. S., Co., The.	20	Playford Stoker Co.	18	Triumph Electric Co.	26	
Blias Co., E. W.	30	Eagle Iron Foundry.	25	Kelly & Jones Co.	*	P. O. Box L.	24	Tudor Boiler Mfg. Co.	18	
Block, Louis.	26	Earl & Wilson.	25	Keystone Crusher & Roller Co.	20	Pomona Terra Cotta Co.	24	U		
Boomer & Boschert Press Co.	23	Easton & Burnham Machine Co.	35	Kiechler Mfg. Co.	42	Pope Mfg. Co.	39	Union Iron Works Co.	26	
Boston Belting Co.	10	Eccles, S., Jr.	*	Kilbourne & Jacobs Mfg. Co.	46	Pope Reversible Street Roller Co.	20	United Electric Improvement Co.	44	
Bradford Belting Co.	11	Egan Co.	29	Kilburn, Lincoln & Co.	34	Porter, H. K., & Co.	13	University of Tennessee.	24	
Bradford Mill Co.	12	Electrical Engin'ring & Supply Co.	45	Kilpstein, A., & Co.	37	Poulter & Co.	26	V		
Bradley Pulverizer Co.	19	Ellis & Helfenberger.	32	Knox, Henry E., Jr.	6	Pound, Bessie E.	*	Valdosta Foundry & Machine Co.	22	
Bradstreet Mercantile Agency.	8	Empire Paint & Roofing Co.	33	L		Powhatan Clay Mfg. Co.	23	Valk & Murdoch Iron Works.	18	
Branson Machine Co.	36	Erikson, Edward E.	6	Lambert Gas & Gasoline Eng. Co.	15	Praray Chas. A. M., & Co.	6	Vandusen Co., E. W.	40	
Brickenstein, L. B.	6	Etting, Edward J.	36	Lambert Hoisting Engine Co.	14	Pratt, N. P., Laboratory.	6	Viaduct Brass Works.	8	
Brooks, T. H., & Co.	33	Eureka Fire Hose Co.	10	Lane & Bodley Co.	15	Pratt & Whitney Co.	8	Vitrified Emery Wheel Co.	28	
Broomell, Schmidt & Co., Ltd.	17	Everson, H. M.	26	Lane Manufacturing Co.	28	Price & Co.	27	Vulcan Works.	34	
Brown-Bierce Co.	39	Excelsior Knitting Mch. Mfg. Co.	23	Lathbury & Spackman.	6	Price & Heid.	27	W		
Brown Cotton Gin Co.	37	Exchange Banking & Trust Co.	23	Lawrence, W. W., & Co.	31	Priestman & Co., Inc.	12	Walker & Elliott.	21	
Brown Hoisting & Con. Mch. Co.	43	F		Leffel, James, & Co.	41	Providence Machine Co.	35	Warren Chemical & Mfg. Co.	32	
Brown, Lucius P.	6	Fairmount Machine Co.	34	Lewis, H. F., & Co., Ltd.	36	Pulsometer Steam Pump Co.	40	Watson, Benjamin.	26	
Brown & Sharpe Mfg. Co.	13	Farquhar, A. B., Co., Limited.	27	Lidgerwood Manufacturing Co.	43	Q		Webster, Warren, & Co.	*	
Buckeye Engine Co.	14	Fay, J. A., & Co.	*	Link-Belt Engineering Co.	10	Queen City Printing Ink Co.	42	Weir Frog Co.	9	
Buckeye Iron and Brass Works.	37	Featherstone's, John, Sons.	16	Lombard Iron Wks. & Supply Co.	9	Queen City Supply Co.	34	Weiss Light Mfg. Co.	8	
Buffalo Forge Co.	46	Fernandina Oil & Creosote Works.	27	Lowell Machine Shop.	36	R		Weiss Mfg. Co.	32	
Burr Manufacturing Co.	9	Pifield Tool Co.	12	Lowell Textile School.	6	Radford, Va., Board of Trade.	24	Western Electric Co.	35	
Bushnell, G. H., Press Co.	37	Fitz-Hugh & Co.	26	Ludlow Saylor Wire Co.	32	Rand Drill Co.	47	Western Maryland Railroad.	2	
Byers, Jao. F., Machine Co.	43	Foos Gas Engine Co.	16	Ludlow Valve Mfg. Co.	43	Rawson Electric Co.	45	Westinghouse Air Brake Co.	2	
C		Foos Mfg. Co.	19	Lunkenheimer Co.	46	Record Printing House.	1	Westinghouse Elec. & Mfg. Co.	44	
Cady, C. N.	10	F. P.	26	Lyons Machinery Co.	25	Reid, Thorburn.	6	Westinghouse Machine Co.	15	
Caldwell, H. W., & Son Co.	4	Forbes, W. D., & Co.	16	M		Remington Machine Co.	16	West Pascagoula Creosote Works.	26	
Cameron, A. S., Steam Pump Wks.	40	Fort Wayne Electric Corporation.	45	Macfarren, S. J.	6	Reuter & Mallory.	26	Whitinsville Spinning Ring Co.	*	
Cameron & Barkley Co.	20	Fossick Co., T. L.	6	Main Belting Co.	10	Rhoads, J. E., & Sons.	2	Whitney, Baxter D.	29	
Capital City Machine Works.	30	Fox Portable Elevator & Rack Co.	2	Makepeace, C. R., & Co.	6	Riley, John F., Machine Works.	26	Wilkinson Mfg. Co.	17	
Carborundum Co.	13	Freese, E. M., & Co.	*	Marine Iron Works.	9	Ritter-Conley Co.	6	Williams Bros.	26	
Card Electric Co.	44	French, Saml. H., & Co.	32	Marion Steam Shovel Co.	2	Roanoke Navigation & Water		Williams, Haskins, & Co.	26	
Cardwell Machine Co.	37	Frick Co.	26	Maryland Casualty Co.	319	Power Co.	25	Williams, I. B., & Sons.	11	
Carlin's, Thomas, Sons.	26	Froehling, Dr. Henry.	6	Maryland Cement Co.	42	Robbins & Myers Co.	25	Williams, John L., & Sons.	319	
Carnell, George.	23	Fuel Economizer Co.	*	Maryland Mfg. & Construction Co.	6	Robins, A. K., & Co.	9	Williams Pat. Crusher & Pulv. Co.	21	
Carver Cotton Gin Co.	37	G		Maryland Trust Co.	319	Robinson, J. M., & Co.	32	Williams & Schmid.	32	
Case Mfg. Co.	43	Galt, John, & Sons.	33	Mason Machine Works.	36	Robinson, Wm. C., & Son.	42	Willis, E.	*	
Caster, Curran & Bullitt.	38	Gandy Belting Co.	11	Mason Regulator Co.	9	Royal Bag Mfg. Co.	2	Wilmington (N. C.) Chamber of		
C. & B. Line.	39	Gardner Governor Co.	40	McClave, Brooks & Co.	18	Ruger, J. W., Mfg. Co.	16	Commerce.	24	
Central Chemical Co.	*	Garrett-Buchanan Co.	33	McCoy, Joseph F., Co.	9	Robinson				

Ads. marked thus * appear every other week.
 Ads. marked thus † appear in first issue of each month.
 Ads. marked thus ‡ appear in second issue of each month.
 Ads. marked thus § not in this issue.

PROPOSALS.

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., May 19, 1898.—Sealed proposals will be received at this office until 2 o'clock P. M. on the 23d day of June, 1898, and then opened, for the constructive steel work, roof framing, &c., of the U. S. Post Office, Court House, &c., San Francisco, Cal., in accordance with the drawings and specifications, copies of which may be had at this office or the office of the Superintendent at San Francisco, California. **JAMES KNOX TAYLOR, Supervising Architect.**

TREASURY DEPARTMENT, Office Supervising Architect, Washington, D. C., May 31, 1898.—Sealed proposals will be received at this office until 2 o'clock P. M. on the 29th day of June, 1898, and then opened, for the rear wall, steel and iron work, skylights, brick and terra cotta floor arches and partitions, and certain changes, &c., for the U. S. Post Office and Court House building at Kansas City, Missouri, in accordance with the drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Kansas City, Missouri. **JAMES KNOX TAYLOR, Supervising Architect.**

CROWLEY, LA., MAY 17, 1898.
I am authorized by ordinance of the City Council of Crowley, La., to advertise for bids at the lowest practicable figures for furnishing the following work and material in extension of the system of water works being put in, in said city as per plans and specifications, prepared by T. W. Kendall, consulting engineer and now on file in my office, approximately as follows: 95 tons of six-inch cast iron pipe to weigh 33 lbs. per foot. 2 tons of four-inch cast iron pipe to weigh 22 lbs. per foot. Eight double nozzle Corey fire hydrants. 3 six-inch gate valves; 1500 lbs. special castings; 400 lbs. pig lead, laying of the above pipe and setting up valves and boxes, the pipe to be laid at such a depth as will insure a cover of two feet. Accompanying each bid must be certified check of 3 per cent. of the gross amount of each proposal payable to the city treasurer, and contractor required to give bond with usual conditions in the sum of 50 per cent. of the amount of contract awarded. Bids to be received until noon of Tuesday, June 7, 1898.
J. E. BARRY, Mayor of Crowley.

SEALED BIDS will be received by the Mayor of the Town of Crowley, La., after plans and specifications prepared by T. W. Kendall up to 12 M. Tuesday, June seventh, for furnishing all material and erecting complete, an extension to the present electric light system.

The material will consist approximately as follows:

6000 ft. No. 2 three-braid weather-proof line wire.
12,000 ft. No. 5 three-braid weather-proof line wire.
31 Sawn cypress poles.
40 Cross arms.
80 Braces.
80 Pins and insulators.
80 Lag screws, $\frac{1}{2}$ " x 8".
80 $\frac{1}{2}$ " washers.
120 $\frac{1}{2}$ " x $\frac{1}{2}$ " lags.
1000 ft. Guy wire.
8 Guy clips.

Each bid must be accompanied by a certified check, payable to the Treasurer of the Town of Crowley, of 15 per cent. of the amount of the bid, and the successful bidders must be prepared to give an acceptable bond of 50 per cent. of the contract price, for faithful performance of the work.

The right is reserved to reject any and all bids.
J. E. BARRY, Mayor.

The Hartzell Self-Draining Reel

is different from others, it is superior, as it is most convenient, it drains all the water out of the Hose after it has been reeled. No obstructions outside of this reel, to interfere with the free winding or unwinding of the Hose.

It is a nice ornament to any lawn. It greatly lessens the expense of keeping up a lawn, because the Hose is kept in order.

It is well mechanically made.

Your customers want THEM.

Will you supply them?

For descriptive circulars and price, address

The Hartzell Novelty Works, Alliance, O., U. S. A.

CHARLESTON, S. C.

Is showing great Commercial Development.

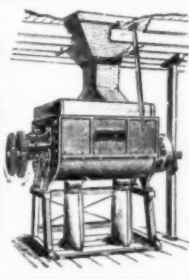
For Sale—Good Dividend-Paying Investment Securities, also Residences, Building Lots, Farms, Manufacturing and Hotel Sites.

An ideal city for a HOME. Full of historic interest. Cost of living is cheap and climate delightful. Educational facilities are unsurpassed.

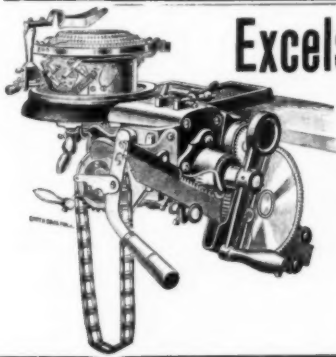
Garden produce of farms near Charleston is shipped to Northern and Eastern markets at good profits.

Exchange Banking & Trust Company, CHARLESTON, S. C.

DRY MIXER
FOR
Hard Plaster, Cement, Paint, &c.
W. D. DUNNING
98 W. Water St., SYRACUSE, N. Y.



If you wish to keep posted on the progress of the South, read the Manufacturers' Record. Price \$4.00 a year.



Excelsior Ktg. Mch. Mfg. Co. NEW '97

Three Quarter Automatic KNITTER
With or Without High Spliced Heel and Double Sole Attachment.

Address all communications for price list and samples to

Excelsior Ktg. Mch. Mfg. Co. ALLENTOWN, PA.

Have You Anything to Sell to Farmers?

If you have, the "Southern Farm Magazine" will find new customers for you. It will help you to sell Farm and Garden Implements and Machinery, Breeding Stock (Cattle, Horses, Sheep, Swine, Poultry), Stock Remedies, Farm and Stock Appliances and Specialties of every sort, Dairy Supplies, Seeds and Nursery Stock, Fertilizers, Household articles and everything needed by the Farmer or his family. An advertisement in the "Southern Farm Magazine" will open up new channels of trade for you. TRY IT.

CARS

MINING, LOGGING, PLANTATION, CONTRACTORS' and SMALL CARS OF ALL KINDS.

Wheels, Axles, Irons, &c.
Send for Catalogue. **GEO. PEACOCK, Selma, Ala.**

BRICK and CLAY-WORKING Machinery

Steam or Horse-Power.

BRICK MACHINES.

GEORGE CARNELL, 1819-1821 Germantown Ave., cor. 8th,

PHILADELPHIA, PA.



ASPHALT PAVEMENTS

Enhance the Value of Property One-Third.

DURABLE HEALTHFUL NOISELESS

20,000,000 square yards laid in eighteen years.

For plans and estimates apply to

THE BARBER ASPHALT PAVING COMPANY.

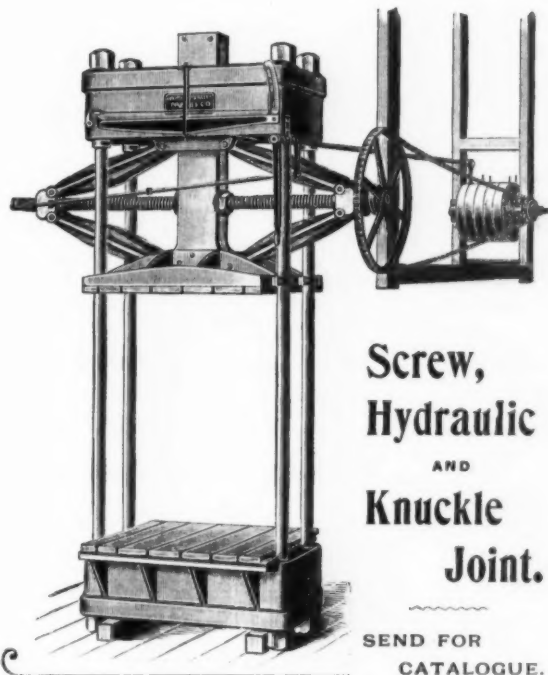
General Office, 11 Broadway, New York.

Think of it.

We sell 10,000 XX-6 3/4 size, good quality envelopes printed for \$10. Write for samples. **ATLANTA ENVELOPE CO., Atlanta, Ga.**

BOOMER & BOSCHERT

BALING PRESS.



Screw, Hydraulic AND Knuckle Joint.

SEND FOR CATALOGUE.

BOOMER & BOSCHERT PRESS CO.
386 W. Water Street, SYRACUSE, N. Y.

F. A. WALKER, President. M. B. FITHIAN, Secretary.

S. H. SINCLAIR CO.

Manufacturers of

LAUNDRY MACHINERY.



"THE SINCLAIR" IRONER
Is the First and the Best.

8-10 S. Canal St. CHICAGO
Write for prices and catalogues.

Do You Want to BUY

"The Columbia" Modern Laundry Machinery

Is the Cheapest and Best.

Latest "Up To Date"

Prices "Right"

WILSON LAUNDRY MACHINERY CO.

Send for Catalog R.

COLUMBIA, PA.



NOT CONTROLLED BY ANY COMBINATION OR TRUST.

"THE STANDARD" SCALES

For all purposes, including

R. R. Track Scales of Largest Capacity. Strictly High Grade.

Send for Catalogue and list of users.

THE STANDARD SCALE & SUPPLY CO., Limited,

Manufacturers, PITTSBURGH, PA.

SILVER GRAY BRICKS

Something New!

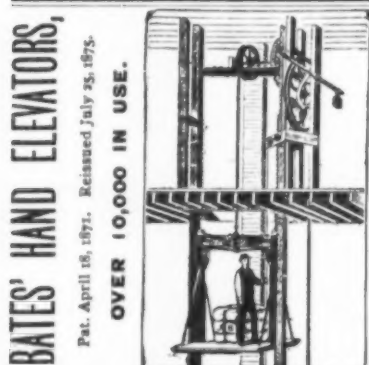
Artistic and beautiful. Perfect solid color and velvet finish. Not affected by weather. Harmonize with all other colors. Write for samples and prices.

POWHATAN CLAY MFG. CO.
RICHMOND, VA.

NEW YORK OFFICE: Townsend Bldg., 1123 Broadway.

Wind Engines.

We are manufacturers of the new style power generators,
Ford Wind Engines for Power.
"Aeolus" Mill for Pumping.
 Steel Towers, Pumps, Tank, Etc.
AEROSTATIC POWER CO.
 1008 S. Fremont Ave., BALTIMORE, MD.
 Send for Catalogue.



Adapted for Warehouses, Stores, Factories, Hotels, Public Institutions and every place where merchandise, &c., is transferred from one story to another.

JAMES BATES' SONS,
 Successors to JAMES BATES,
 COR. PRATT AND PRESIDENT STREETS
 BALTIMORE, MD.

FREIGHT ELEVATORS

For Hand, Belt and Electric Power.
 Lag Screws, Carriage and Machine Bolts,
 Drift Pins and all kinds Special BOLTS
 made by

PARKHURST BROS. & CO., - Indianapolis, Ind.

FRANKLIN S. MILES, 207 Quarry Street,
 PHILADELPHIA, PA.
 ESTABLISHED 1860.



POMONA TERRA COTTA CO., Pomona, N.C.

SEWER PIPE
 Manufacturers
 SEWER, DRAIN, CULVERT and
 TERRA-COTTA FLUE PIPE
 and FIRE BRICK.

Atlanta Terra Cotta Co.

ARTISTIC WORK.
 PROMPT DELIVERIES.
 LOW PRICES.

Address all communications to
V. M. Kriegshaber, Gen'l Sales Agent, Atlanta, Ga.



SKINNER CHUCKS
 Independent and Universal
 Chucks, Combination
 Lathe Chucks with patent
 reversible jaws, Drill
 Chucks, Planer Chucks
 and Face Plate Jaws.
SKINNER CHUCK CO.
 NEW BRITAIN, CONN.

NOTICE.

We mine, manufacture, buy and sell all kinds of mineral paints, dry colors, minerals and clays. **ALPHA PAINT AND MINERAL CO.,** 338 Bourse Building, Philadelphia, Pa.

SPECIAL Advertisements OF GENERAL Interest.

OPPORTUNITIES FOR INVESTORS.

--- INVEST IN ---

Columbus, Georgia. 20,000 Electric H. P.

Developed and Being Developed.

125 Feet Fall at Columbus, Ga., in Chattahoochee River.

Largest and Cheapest H. P. in the South.

Established Manufacturing Center.

Large Operative Population. Temperate Climate.

Columbus Was Incorporated in 1829 and Has Never Had An Epidemic.

Free Mill Sites, either in or just without the corporate limits. No Strikes.

Lowest Tax Rate of any Georgia County.

No Oppressive State Legislation.

Seven Railways. Five Steamboat Lines.

Low Freight Rates.

Electric Belt Line. Electric Street Cars.

Minimum Cost of all Building Material.

Public Day, Night and Kindergarten Schools.

Handsome Churches and Public Library.

A Refined and Progressive Citizenship.

The Coming Great Manufacturing Metropolis of Georgia and the South.

ADDRESS **L. H. CHAPPELL, Mayor, or**
RHODES BROWNE, Secretary
 Columbus Board of Trade,
COLUMBUS, GA.

TWO MILLIONS ACRES LAND FOR SALE.

In Alabama, Florida, Mississippi and Texas.
 Dry, Healthy, Fertile and Well Timbered.
YELLOW PINE LANDS A SPECIALTY.

Apply to or address **JOHNSTON & NELSON, 241 E. German Street, BALTIMORE, MD.**

RADFORD, Virginia.

Parties desiring to start new enterprises or change location, are invited to investigate Radford, Va. Good climate, water and drainage, elevation, 1800 feet. On Norfolk & Western Ry. at junction of Columbus, O., and Pocahontas Coal Fields divisions, as well as Southern connection via Knoxville, Tenn. In midst of fine agricultural country and 25 miles from ore fields. Population, 4000, churches, public and private schools, electric light and car line. Ice plant and other manufactures.

Responsible parties are offered inducements, including no city taxes for five years. Address

G. T. KEARSLEY,
 Secretary Board of Trade,
RADFORD, VA.

WILMINGTON, N. C.

The Place for Factories.

Central location between extreme North and South. Climate perfect. City very healthy. Surrounded by the most productive cotton and rice plantations and truck farms. One lives cheaply in Wilmington and consequently labor is cheap also. Our city is the best situated on the South Atlantic Coast for factories of all descriptions, it has the lowest freight rates in the entire timber and cotton belt. Our cotton mill runs day and night, and new factories are exempt from taxation for ten years.

For further information write to the
SECRETARY of Chamber of Commerce.

FOR SALE.

All the machinery of a small

New England Cotton Mill.

4400 Spindles. Will be sold at a Bargain for Cash. For particulars apply to

PARKMAN DEXTER,
 P. O. Box 1272, BOSTON, MASS.

FOR SALE.

Cotton Spinning Mill

NOW IN OPERATION.

3 Lappers, 40 inch; 10 Dobson & Barlow 40-inch Cards; Lowell Slubbers and Speeders; 1000 Whitin 2-inch Ring Spindles; 2 Fales & Jenks Twisters; Small Rope Formers and Layers. Steam Plant, 12x36 Brown Automatic Cut-off Engine, Boiler, Pump, Lathe, Drill Press. A complete Mill at a Bargain. Address

J. I. DeCAMP,
 16 E. 2d Street, Cincinnati, O.

THE SOUTHERN FARM MAGAZINE IS UNQUESTIONABLY AND INCOMPARABLY THE MOST ECONOMIC AND EFFECTIVE CHANNEL THROUGH WHICH THE SELLER OF SOUTHERN LANDS MAY REACH THE ATTENTION OF THE NORTHERN AND WESTERN BUYERS OF SUCH LANDS. PUBLISHED BY MANUFACTURERS' RECORD PUBLISHING CO., BALTIMORE.

NOTICE.

By virtue of the order and decree of the Circuit Court of the United States, for the district of South Carolina, in the case of Alfred S. McCombs vs. the Wappoo Mills et al, filed in said court on 24th February, 1898, I will sell at PUBLIC AUCTION on the

Ninth day of June, 1898,

at the Court House of Charleston County, in the City of Charleston, S. C., at eleven o'clock in the forenoon, the

Franchises and Property of the said Wappoo Mills,

Constituting a Fertilizer Manufacturing Establishment situate near the City of Charleston, together with the property connected therewith.

For a particular description of the property, and for the terms and conditions of sale, reference is made to said decree and the advertisement of said sale published in the News and Courier, published in the City of Charleston. Further particulars as to said sale can be had by application to the undersigned, addressed at Charleston, S. C.

WM. E. HUGER, Receiver.

UNIVERSITY OF TENNESSEE.

CHAS. W. DABNEY, Ph.D. L.L.D., President.

In addition to the usual Literary, Law, and Scientific departments, this institution has Departments of Civil, Mechanical and Electrical Engineering.

The most extensive and best equipped laboratories in the South for Chemistry, Physics, Electricity, Botany, Biology, Agricultural Chemistry and Pharmacy.

Large new shops erected this year for Mechanic Arts, Steam, Electrical and Hydraulic Engineering.

Climate healthful and mild. Faculty of twenty-one. The place to educate the South's future industrial workers.

Tuition Free. Expenses from \$175 to \$225 for session of nine months. For information address **REGISTRAR, University of Tennessee, KNOXVILLE, TENNESSEE.**

FOR SALE.

- 1 Globe Gas Engine, 18 H. P.
- 2 Broughton Mixers, made by Dunning, Syracuse, N. Y.

Large Sand Dryer, Hair Picker, Elevators, Lime Crushers, Hangers, Shafting, Pulleys, &c.

Apply to

FRANK SAMUEL,
 Harrison Building, PHILADELPHIA, PA.

FOR SALE.

Up-to-date Wheel Factory

in one of the best Southern cities. 5 railroads. Capacity 150 sets of wheels per day. 10,000 finished spokes per day. Best of material right at door at cord-wood prices. Address

P. O. BOX L,
 Meridian, Miss.

FOR SALE.

WE DESIRE TO SELL OUR

BRICK PLANT.

Clay suitable for soft mud brick, stiff clay brick and dry pressed brick. Capacity 12,000 to 16,000 brick per day. Ten acres of land goes with brick plant. Half mile from Fairmont, W. Va.

BARNES BROS., Fairmont, W. Va.

HELP WANTED.

Advertisements under this head will be inserted hereafter at the rate of one cent a word for each insertion.

WANTED: OFFICE MAN—Experienced man for secretary and treasurer of high-rated established manufacturing concern. Must invest \$5,000 in stock of the company, which has never failed to pay more than 10% annual dividend. Liberal salary. Address **MAGRUDER, 406 Austell Building, Atlanta, Ga.**

WANTED—Traveling salesmen on salary or commission to sell our steel pens to offices, banks and stationers. Agents need apply. Address **SPOT CASH PEN CO., Boston, Mass.**

WANTED—Capable, reliable, enterprising business man to take entire control of novel device for advertising. Small capital required to push device, not to buy it. Address **ADVERTISER, care Manufacturers' Record.**

SITUATIONS WANTED.

Advertisements under this head will be inserted hereafter at the rate of one cent a word for each insertion.

WANTED—Gentleman (35) is looking for a responsible office or travelling position. Steel manufacturing business preferred, on account of his extensive connection with and knowledge of continental business through own former business. Write **RESPONSIBLE, care Manufacturers' Record.**

WANTED—A position as superintendent or manager by a practical coal mining man who understands all systems of mining and ventilating, and understands the manufacturing of coke, &c. I have been superintendent and manager for the last nine years and have a good position at this place now. Can give the best references from former and present employers, but desire to change location; would prefer West Virginia, Tennessee or Kentucky. Address **SUPERINTENDENT, care Mfrs. Record.**

FORECLOSURE SALE

OF THE
Property and Franchise of the
Catawba Mills of Chester,
South Carolina.

Under and by virtue of the decree of the Circuit Court of the United States, for the District of South Carolina, filed the thirtieth day of April, A. D. 1898, in the case of The D. A. Tompkins Company vs. the Catawba Mills and others, I, Julius H. Heyward, Standing Master of said court, will sell at public auction, upon the premises of said defendant corporation, near the City of Chester, in the County of Chester and State of South Carolina, on the tenth day of June, 1898, at 12 o'clock M., all that piece or parcel of land containing about four acres, situated on the Saluda Road, one mile north of Chester C. H. in said State, whereon is located this Cotton Mill of the Mortgagor (the Catawba Mills); also that other piece or parcel of land containing ten acres situated off the eastern side of said road, whereon is located the operatives houses of the Mortgagor (the Catawba Mills); also all the machinery and manufacturing plant contained in the first-named building, consisting of engines, boilers, spindles, cars, shafting, belts and machinery of every class and description now there for manufacturing purposes; also all the other personal property of the said Company; also its franchise or charter rights secured from the said State. Together with all and singular the right, tenements, hereditaments and appurtenances to the said premises belonging or in any wise incident thereto. And also that certain lot adjoining above described property, upon which the superintendent's house is located. It being all the property involved in this litigation.

TERMS.—One-half cash, to be paid at the time of confirmation of sale; balance to be paid twelve months after date of confirmation, with interest on the credit portion at the rate of 6 per cent. per annum, secured by purchasers' bond and mortgage upon the premises, together with policy of insurance for not less than \$25,000. The purchaser to have privilege of paying the entire bid in cash, or at any time within twelve months. Purchaser to pay the Master for pay. The upset price to be bid for said property at the time of said sale shall be \$45,000, and the Master making the sale will receive no bid unless there shall be deposited with him in cash or certified check \$6,000 at the time of the sale, which amount shall be returned to the bidder if the sale be not confirmed; and if the sale be confirmed the said amount shall go as a part of the purchase money.

JULIUS H. HEYWARD,
Standing Master.

Cotton Machinery

FOR SALE.

Apply New York Office, 18 Walker Street,
or at Mills, Paterson, N. J.

**Plant of 40,000 Spindles
Being Sold.**

Carding, Spinning, Winding and Weaving
Machinery. All in excellent condition.

Prices Low. Send for Complete List.

ALSO

**Bleaching, Dyeing and
Finishing Machinery.**

Robt. Franklin Adams.

Patent Grate Bar Right

FOR SALE.

New England and Western States for Sale.

Big income from royalty. One county in North Carolina pays \$1,500 per year. Wanted manufacturing agents in every State to work on royalty. One hundred per cent. profit to manufacturers. Salesmen on commission or on lease as agent for specified territory. Big profit to business men. Saves 20 per cent. fuel in every particular. "They are great savers of fuel and give perfect satisfaction in every particular." Geo. A. Gray and R. C. G. Love, of Gastonia, N. C.: "Works better than you claimed." Particulars on application to

EARL & WILSON, Gastonia, N. C.

WANTED.

Machinery to Manufacture

We have a thoroughly equipped Machine shop, Carpenter Shop and Foundry, and can do all classes of Machine Work very reasonable. Try us.

**SOUTHERN FOUNDRY & MACHINE WORKS,
FREDERICKSBURG, VA.**

AGENTS WANTED—To Sell the

"Battle Ax" Hay Press.

Latest invention, Automatic, Ball Bearing, Compound Leverage, Self Contained. No gear wheels or springs, Full circle, Simple in construction, efficient in service. Write, prices, discounts.

**ALABAMA FOUNDRY & MACHINE WORKS,
NEW DECATUR, ALA.**

ROBERT WARE GRASTY,
Attorney and Counsellor-at-Law,
EQUITABLE BUILDING,
ATLANTA, GA.

General law practice. Collections, loans, money
invested, options secured and information
furnished concerning Southern
properties of all kinds.

Incorporate Your Business.

West Virginia Laws Most Liberal.
No Personal Liability. Non-Assessable Stock.
Plan mailed on application.
**J. A. THAYER & CO., Attorneys,
Charleston, W. Va.**

Corporation Laws of West Virginia

Are the Best.

Charter is good in any state, no liability, signers
furnished, reduced expense, consultation free.

**INTER-STATE LAW ASSOCIATION,
CHARLESTON, W. VA.**

Horse Power for Sale or Lease.

Manufacturers who are contemplating
removing their plant or establishing
a branch factory are invited to inves-
tigate the superior advantages pos-
sessed by the

**Roanoke Navigation
& Water Power Co.**

The third largest power in the United
States, situated at WELDON, N. C., at
the junction of the Seaboard Air Line
and Atlantic Coast Line.

2000 HORSE POWER NOW READY for im-
mediate use and capable of development to
almost any extent, situated at the head of navigation of Roanoke River and junction of Atlantic Coast Line and Seaboard Air Line, INSURING FIRST-CLASS SHIPPING FACILITIES TO ALL PORTS AND LOW FREIGHT RATES. Absolutely free from interference by high water. Good manufacturing sites for various industries are available. 2,000,000 brick on hand and a yard sufficiently large to supply any demand. Weldon is in the centre of the RICHEST COTTON LAND IN THE SOUTH, 200,000 BALS COTTON BEING PRODUCED ANNUALLY.

This section is RICH in TIMBER and WOOD for manufacturing purposes, as well as for making acetate of lime of potash. Boats using 3 1/2 feet water can go up the river from our power site for 30 miles, developing a valuable timber country that has not been penetrated.

FOR THE ESTABLISHMENT OF AN ICE FACTORY no better location can be found, having a territory of a radius of 50 miles, containing a population of 400,000. LABOR is INTELLIGENT, ABUNDANT and CHEAP. ALL DESIRABLE and NEEDED ADVANTAGES.

Our power can be bought or leased at reasonable rates. Will take pleasure in answering all requests for detailed information. Address

Roanoke Navigation & Water Power Co.
JAS. W. WILSON, Pres. & Gen. Mgr.
WELDON, N. C.

For Sale to Close Out Business.

26,000 ACRES OF LAND,
From 4 to 16 miles from Summerville, S. C. a noted health resort, containing long and short leaf pine, oak, hickory, ash, cypress, etc. Contains excellent farming and pasture land, and is convertible into a game preserve. Also second-hand machinery in good order.

**A. W. TAYLOR LAND & LUMBER CO.,
SUMMERVILLE, S. C.**

JUSTICE COX, JR.

552-554 Bullitt Bldg., Phila.,

FOR SALE CHEAP.

Lot of drop bottom, diamond truck Gondola Cars. Ore capacity, about 44,000 lbs.

Tough. Clean. Dense.
Recommended for Rolls Ice Machinery and all castings requiring dense structure and smooth finish.

**HICKMAN PIG IRON.
HICKMAN, WILLIAMS & CO.**
Exclusive Agents,

CHICAGO: 1138 The Rookery, LOUISVILLE: Kenyon Building.
Tel. Main 826.

If you wish to keep posted on the progress of the South, read the Manufacturers' Record. Price \$4.00 a year.

**The Columbia
Water Power Co.**

COLUMBIA, S. C.

Has Developed 10,000 Electric H.-P.,

Which They Offer For Sale In Large or

Small Units for Manufacturing Purposes.

The Largest Electrical Horse-Power developed in the country outside of Niagara Falls. Ample power at all seasons of the year. Free from ice in winter. More economical than steam.

= = COLUMBIA = =

Has a population of 25,000. It has educational advantages equal to any city in the country. The climate is equable and agreeable. Taxes are low and building material cheap.

Skilled Labor and Freedom from Labor Organization Interference.

Seven Railroad Systems Enter Columbia, Insuring
Low Freight Rates to All Points.

THE CENTRE OF THE COTTON PRODUCING COUNTRY.

Address Boston Office, 53 State Street, Room 608,

GEO. WALLACE, Gen'l Mgr.

BOSTON, MASS.

WM. C. HAWKINS, Managing Engineer, Columbia, S. C.

Factory Buildings

For Lease on Line of

Southern Railway.

Substantial set brick factory buildings located in the city of Burlington, N. C., especially adapted for machinery works, agricultural implement works, or wood working factory. Convenient distributing point. Vacant on account of removal of shops of the Company. This is an opportunity to secure one of the best plants in the South.

We also offer desirable locations for all kinds of factories in the states of Virginia, the Carolinas, Georgia, Alabama, Tennessee, Mississippi and Kentucky. Correspondence confidential. Address

M. V. RICHARDS,

Land and Industrial Agent, Southern Railway Co.

Washington, D. C.

PAINT MACHINERY Mills, Mixers,
Can Fillers, &c.
Low prices, large assortment. Write for particulars.
LYONS MACHINERY CO.,
Station B, No. 61, Cincinnati, O.

FOR SALE.

Heavy Jib Crane, lifting 25 tons. Can be seen in use at the EAGLE IRON FOUNDRY, Nicetown, Phila. Price \$200.

Bargains in Machinery

FOR IMMEDIATE DELIVERY

Ice Machine.

FIVE TONS CAPACITY.

Complete with Compressor, Liquefier, Coils, Tanks, &c. Used only one year.

Copper Still.

THIRTY GALLONS CAPACITY.

With Worm and all fixtures for setting. Extra heavy and entirely new.

Both of these will be sacrificed for quick sale.

THOS. P. CONARD,

16 Forrest Building, Philadelphia.

WANTED—A second hand Corliss Engine 16x42 inch; must be in perfect order. Address with full description and price, f. o. b. Corliss, Wolf City, Texas.

FOR SALE.

140 H. P. Engine; 65 H. P. Engine; 2 No. 5 Knowles Pumps; 1 10" x 12" Porter Engine; 1 25 H. P. Erie City Iron Works Economic Boiler; 1 50 H. P. Return Tubular Boiler; 3 65 H. P. Return Tubular Boilers; 1 8 H. P. Upright Boiler, all thoroughly overhauled, also 1 Marine Boiler, new, to suit 17" Square Engine, and 300 ft. of 6" Cast Iron Pipe with flanges on ends and a lot of Saw Mill machinery. Write for prices to **JOHN F. RILEY'S MACHINE WORKS,** 6 and 8 South Street, CHARLESTON, S. C.

FOR SALE.

ENGINES for Blast Furnaces, Foundries, Converters and Rolling Mills. **MILL TRAINS** (3-high), 36 in., 30 in., 20 in., 18 in., 12 in., and 6 in. **SHEARS** for Blooms, Billets, Plates, Sheets, Old Rails and Scrap. **CRANES**—Yale and Towne Pillar Crane (10-ton); Jib Cranes, Iron and Wooden. **STEAM HAMMERS**, various sizes and makes. **SQUEEZERS** (Rotary). **FLY WHEELS** and **BAND WHEELS**, various sizes. **Punches**, Straighteners, Roll Lathe, Riveter, Machine Shop Tools, etc., etc. **LOCOMOTIVES**, various gauges, sizes and styles.

B. M. EVERSON, 301 Smithfield Street, PITTSBURGH, PA.
Sales Agt. **BALDWIN LOCOMOTIVE WORKS,** Philadelphia, Pa.

FOR SALE CHEAP.

Two 8 to 10 H. P. and 1 25 H. P. Upright Engine, New; also

1 12 H. P. Horizontal Engine

in A No. 1 condition; also

1 60 H. P. Upright Boiler

in first-class condition. Address

REUTER & MALLORY, Baltimore, Md.

FOR SALE.

No. 16.—1 engine lathe complete with counter; maker, Grant & Bogart; swing, 15 in.; bed, 5 ft. or 2 1/2 ft. between centers; 1 face plate; 1 steady rest; gears complete; condition good.

No. 14.—1 engine lathe complete with counter; maker, Grant & Bogart; swing, 14 in.; bed, 6 ft. or 3 ft. between centers; 2 face plates; condition good.

No. 1.—Engine lathe complete with counter; maker, Prentiss; swing, 15 in.; bed, 6 ft. or 4 1/2 ft. between centers; 2 face plates; 1 steady rest; 1 chuck; gears, 13; condition excellent.

No. 10.—Speed lathe with counter and no hangers; swing, 13 in.; bed, 6 ft. or 4 ft. between centers; 1 face plate; condition good.

No. 3.—Speed lathe with counter complete; maker, Spencer; swing, 10 in.; bed, 4 ft.; 1 hand rest; 1 face plate; condition good.

No. 50.—Milling machine with counter complete; maker, Ames; 1 center rest; 1 arbor; condition good.

No. 86.—Splining machine, 4 cutters, 5-16, 3-8, 9-16, 1 in.

No. 20.—Colburn keyseater complete with counter; maker, Baker Bros.; size, No. 2; condition new (has not been used, taken in trade).

Hydraulic press, complete; maker, Watson & Stillman; 7 in. cylinder; condition first-class.

NOTE—The above are for the most part duplicate tools acquired in the purchase of a complete plant and have seen but little service.

We will make liberal discounts to the trade or to parties desiring to purchase any number.

The Triumph Electric Co.

Cincinnati, Ohio.

YOU CAN SAVE MONEY

by buying your Dynamos, Lamps, Generators, Motors, etc., from us apparatus guaranteed to be in excellent operative condition. Central stations and isolated plants can turn scrap dynamos, wire and incandescent lamps into cash by writing to us.

THE CORNMANN COMPANY,

1130 Hamilton Street, CLEVELAND, OHIO.

SECOND-HAND

Automatic Engines and Boilers

In great variety at low prices. These engines have been all rebuilt, are practically equal to new. Send for quotations. State just what you need.

S. L. HOLT & CO.

67 Sudbury Street, BOSTON, MASS.

For Sale—Second-hand Tools.

5 Sheet Iron Rolls, 2 Boiler Rolls, 2 Lever Sheet Iron Shears, Lever Punch, Combined Punch and Shear, Boiler Maker's Punch, 30" Drill Press, 14" Engine Lathe, 6" Brake, all in excellent condition.

BERTSCH & CO.,

Cambridge City, Ind.

BARGAINS In New and Second-Hand MACHINERY.

Lathes from 12" to 48". Planers from 20" up to 60", 48", 54" and 60" Radial Drills, No. 2 Newton Milling Machine, No. 2 Screw Machine, Shapers from 6" to 30". Boilermakers' Punches, Shears, Edge Planers, Rolls, Drills, Engines, Boilers, Pumps and Dynamos

FRANK TOOMEY, 131 N. THIRD ST., PHILA.

ARCTIC MACHINES FOR SALE.

We have at our works two second hand Arctic Machines of 50 tons refrigerating, or 25 tons ice making capacity. We have put these machines in first-class repair and they are in good running order. Will sell them at a bargain. If interested write for full particulars and prices.

FRICK COMPANY,

Waynesboro, Pa.

FOR SALE.

A FOUR-PRESS OIL MILL,

And in connection therewith a 17-ton Ice-Making Plant and a Cold-Storage Building, in Macon, Ga.

LOUIS BLOCK,

Care The De La Vergne Refrig. Machine Co. NEW YORK, N. Y.

FOR SALE.

One Morgan Traveling Crane,

Ten tons capacity, span 45 feet 6 inches. In first-class condition.

THE WESTINGHOUSE MACHINE CO PITTSBURGH, PA.

FOR SALE.

18 Platt Bros. Revolving Flat Cards, 40 in. wide; 67 flats; equal to new.

3 Platt Bros. Roller Cards, 40 in. wide.

1 Platt Bros. Spreader.

1 Dronfield's Grinders.

All above can be seen by applying to

EDWARD JEFFERSON & BRO.

28 Strawberry Street, PHILADELPHIA, PA.

FOR SALE—CHEAP.

One (1) 24" Horizontal McCormick Turbine Wheel, wheel case large enough for a pair of wheels, all mounted on heavy steel "I" beams. long draft tube to conduct water from wheel. Outfit built to work under 40 ft. head, but can be used under lower heads; 84"x18" Fly Wheel, weighing 5000 lbs.; also 1 Governor. For prices and drawings apply to **THE ANDERSON WATER LIGHT & POWER CO., Anderson, S. C.**

FOR SALE.

One second-hand "BERRYMAN" HEATER AND PURIFIER, in perfect condition and guaranteed good as new. Will sell cheap for cash. Address

M. F., care Mfrs. Record, Baltimore, Md.

BARGAINS! DYNAMOS IN STOCK.

Incandescent—16, 30, 35, 40, 50, 60, 100, 125, 150, 200, 250, 300, 350, 425, 450, 500, 540, 650, 750, 1000 Light.

ARC—9, 18, 20, 25, 30, 35, 40, 45, 50, 60, 65 Light; 1200 C. P. or 2000 C. P.

Alternators—500, 600, 650, 750, 1000, 1300, 2000 Light

Power Generators—20, 25, 50, 60, 75, 100 Horse Power.

All of Standard makes, principally Edison, Thomson-Houston, Westinghouse, Brush. Send for monthly BARGAIN SHEET giving complete list with prices. Also Motors, Arc Lamps, Instruments and Supplies.

CHAS. E. GREGORY COMPANY,

58-60 62 Clinton St., CHICAGO.

Spinning for Sale.

20 Frames Rabbeth Spindles, in excellent condition, and spooling (Drapers) for same. Address F. P., care Manufacturers' Record, Balto., Md.

LOCOMOTIVES

ADAPTED TO A VARIETY OF USES.

All of the Lake Street Elevated R. R. Engines

have had less than three and some of them less than one year's wear.

Weight, 28 to 30 tons. Twenty tons on Drivers.

Diameter of Drivers 44 inches.

Four-Wheel Steel Tired Truck under tank.

Two-Wheel Pony Front Truck added, if desired.

Tank Capacity, 750 Gallons.

May be Increased to 1000 or

1750 Gallons. Vacuum Brakes.

A large line of 8 and 10-wheel road engines; also 4 and 6-wheel connected switchers; also narrow gauge equipment.

For prices and full description write

FITZ-HUGH & COMPANY,

Dealers in Relaying Rail, Locomotives, etc.,

MONADNOCK BLOCK, CHICAGO.

Mention this paper.

FOR SALE.

20 logging cars, 3 foot gauge; 1 14 ton Shay locomotive, 3 foot gauge; 75 tons 25-lb. iron rails at Burtville, La. 2 8 ton, 7x12, 3 foot gauge Porter saddle tank locomotives; 1 22 ton standard gauge, 12x19, Porter saddle tank locomotives; 1 14 ton Standard gauge, 9x14, Porter saddle tank locomotive; 4 miles 40-lb. steel rail; 8 miles 30-lb. steel rail, all at Birmingham, Ala. 150 tons 30 lb iron rails in Tennessee.

HASKINS WILLIAMS & CO.

BIRMINGHAM, ALA.

FOR SALE.

Several Shay Patent Logging Locomotives.

Also other logging locomotives and cars.

M. MITSKUN & CO.

Wight St. near Meldrum Ave., Detroit, Mich.

Relaying Rails

50, 56, 58, 60, 67 and 70 pounds to yard

FOR SALE.

DALLETT & CO.

301 Walnut Place, PHILADELPHIA, PA.

RAILS and LOCOMOTIVES

We have a lot of RELAYING RAILS with fastenings, 16 pounds to 56 pounds with fastenings. Also 12-ton, 15-ton, 25-ton and 30-ton LOCOMOTIVES. If in the market for RAILWAY EQUIPMENT write us for prices and specifications.

SOUTHERN IRON & EQUIPMENT CO., Atlanta, Ga.

Relaying Rails.

This company has for sale

2000 Tons of 60-lb. Relaying Rails, From the New England R. R.

500 Tons of 50-lb. Relaying Rails, From the Norfolk & Western R. R.

150 Tons of 32-lb. Relaying Rails, From the Norfolk & Western R. R.

Can be delivered most favorably in the South.

Address **BENJAMIN IRON & STEEL CO., Buffalo, N. Y.**

We are always in the market to buy or sell old material.

Relaying Rails.

Second-hand equipment and light new Steel Rails.

L. E. HIRSCH, 549 Rookery Bldg., Chicago.

FOR SALE.

A number of Second-hand

SPLIT SWITCHES

for 30 lb. rail, (3 ft. gauge of track), including 4 ft. Frog, Ground Lever, Switch Points and Connecting Rods.

New and Relaying Steel Rails Bought and Sold.

ROBINSON & ORR,

419 Wood St., PITTSBURGH, PA.

FOR SALE

8 3-ft. gauge Locomotives.
1 Standard gauge Locomotive.
2 1 1/2-yard Steam Shovels.
6 3-ft gauge 3 yard Dump Cars.
25 new 3-ft. gauge 3 1/2-yard Cars, for shovel or hand work.
5 side and centre Unloading Plows.
1 Leveling Car with plow.
10 Hoisting Engines.
6 Centrifugal Pumps.
Large stock of Engines, Boilers and Steam Pumps.

THOMAS CARLIN'S SONS, ALLEGHENY, PA.

BARGAINS! COMPLETE MINING OUTFIT.

1-Norwalk Air Compressor, 20" Cylinder.
1-Clayton Air Compressor, 14" Cyls. Duplex.
3-Lidgerwood Hoisting Engines, 7"x10" and 8"x12"
2-100 H. P. Horz. Boilers, all complete.
2-40 H. P. Horz. Tubular Boilers, all complete.
1-85 H. P. 18"x28" Watertown Horz. Engine.
All the above, together with lot of Drills, Receivers, Duplex Pumps, Feed Pumps, Engines, Boilers, Machine and Blacksmith Shop Equipment, will be sold low. For full particulars and prices,

Poultner & Co., 206 Bullitt Bldg., Philadelphia, Pa.

HIGH-GRADE LOCOMOTIVES.

New York Elevated Railroad and Brooklyn Bridge Locomotives.

These Locomotives are Standard Gauge, until recently in service on the above-mentioned railroads, being suitable for use on Logging and Suburban roads, and for switching purposes.

They have been discontinued from service because of the introduction of electricity and the replacement by heavier locomotives; therefore, not offered for sale on account of their inefficiency. They are all in thoroughly good condition, and expert examination is invited. For prices and illustrated descriptions address

BENJAMIN WATSON,

Coffee Exchange Building,

66 Beaver Street, NEW YORK CITY.

RELAYING STEEL RAILS.

STEEL RAILS

FOR SALE.

NEW STEEL RAILS, all weights.

CASH OR INSTALMENT PLAN.

RELAYING and SCRAP RAILS

Bought and Sold.

Several Standard Gauge Dummy Locomotives, Suitable for Logging and Suburban Railways.

THE STEEL RAIL SUPPLY CO.,

Successors to HUMPHREYS & SAYCE,

100 Broadway, NEW YORK, N. Y.

If you wish to keep posted on the progress of the South, read the Manufacturers' Record. Price \$4.00 a year.

FOR SALE.

Locomotives. Passenger Cars.

FOUR six-wheel Baldwin Switchers with eight-wheel, slope-back tenders, equipped with Westinghouse Airbrakes to drivers, tender wheels, and with train connections, now being overhauled at Baldwin Locomotive Works, ready in a few days. A rare opportunity to obtain a bargain.

We have also obtained an additional lot of the 50 ton 18x24 inch cylinder ten-wheelers, recently advertised; have two just out of shop, in perfect order. The last lot went off like hot cakes.

A large lot of Passenger Cars, Miller Couplers, Westinghouse Airbrakes. Cars are of various sizes. If you wish to buy write us.

NEW YORK EQUIPMENT CO., 80 Broadway, New York.

LOGGING CARS,
LIVE ROLLS,
DRY KILNS,
IRON KILN TRUCKS

SECOND-HAND LOCOMOTIVES
UNION IRON WORKS CO., Selma, Ala.



THIS HANGER

GUARANTEED TO GIVE PERFECT SATISFACTION, and our TRACK has no equal, and

OUR PRICES are RIGHT.



Patented June 12, 1888.

With covered wheels, making it stronger, and also keeps off all storm and everything that might block the wheels, and cannot be broken or thrown from the track. Each hanger has gauge mark to put it up by, so anyone can hang door and get it right first time.

CRONK HANGER CO., - - ELMIRA, N. Y.

THE COBURN PATENT TROLLEY TRACK



Fire Door Hangers.

Recommended and adopted by fire underwriters all over the United States. SEND FOR BOOK.

THE COBURN TROLLEY TRACK MFG. CO., Holyoke, Mass.
F. H. DAVIDSON & CO., Baltimore, Md., Southern Sales Agents.

Successors to Shepard Hardware Co. of Buffalo, N. Y.

In Blind, Shutter and Gate Hinges, Gate Latches, Frame Axle Pulleys, No. 25 Niagara, No. 26 Star, No. 30 IXL, No. 60 Square End, No. 35 Acme solid case with markers, and the Gem Machine Pulley from 1 1/4 in. to 2 1/2 in.

We also Manufacture

Stenger's Patent Self-Locking "Noiseless Blind Hinge," Christman's Shutter Lock and Bower, Furniture Casters, Shelf Brackets Plain and Rosette, Plumbers Brackets Nickel Plated and Plain, Hay Fork Pulleys, Well Wheels, Grindstone Fixtures, Nail Hammers, Claw and Shingling Hatchets, Toy Hammers and Hatchets, Toy Sad Irons and Stands, Jackstones in Boxes or Bulk, &c.

WRITE FOR CATALOGUE AND PRICES.

WRIGHTSVILLE HARDWARE CO., Wrightsville, York Co., Pa.

HOOPES & TOWNSEND,

Philadelphia, Pa.

MAKE RIVETS

IN SOLID DIES.

No. 9 x 1/4 in. to 1 1/2 x 42 in.

Cable "HEALD."

P. O. BOX 202.

PRICE & HEALD,

Wholesale Dealers and Manufacturers

HARDWOODS & POPLAR

Sawed or in the Log, for Domestic or Foreign Trade.

Yards, Locust Point.

Office, Manufacturers' Record Building,

Branches: Grafton, W. Va., Bristol, Tenn.

BALTIMORE, MD.

VENEERS AND HARDWOOD LUMBER.

Importers of
Mahogany and Foreign Woods,

Manufacturers of
DOMESTIC & FOREIGN

Hardwood Lumber and Veneers,
Cigar Box Lumber.

The E. D. Albro Co.

VENEER CUTTING
AND BAND SAW MILLS.

CINCINNATI, O.

EASTERN BRANCH, Corner Sixth and Lewis Streets, E. R., New York



PATENT LATHES

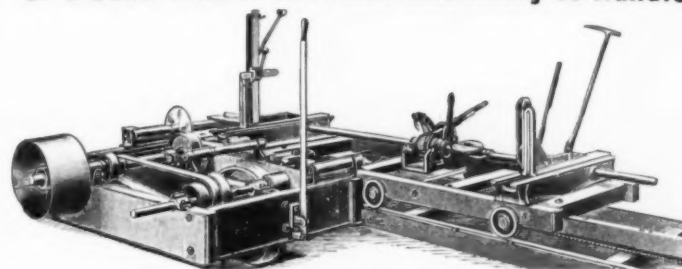
For turning Axe, Adze, Pick, Sledge, Hammer, Hatchet, Auger, File, Knife, Chisel, Fork, Hoe, Rake, Broom and Mop HANDLES, Pike Poles, Whiffletrees, Yokes, Spokes, Porch Spindles, Table Legs, Tent Stakes, Ball Bats, Mallets, etc.

Boring Machines, Sanders
Chucking Machines,
Shapers, Special
Machinery.

The Ober Lathe Co.
Chagrin Falls, Ohio, U. S. A.

If You Want a Good Saw Mill

Or a Good Line of Saw Mill Machinery to Handle



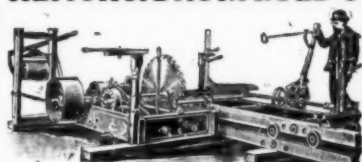
WRITE TO

STANDARD SAW MILL MACHINERY CO.

911 East 12th Street, - ERIE, PA.

Saw Mills, Gang Edgers, Saws, Engines, Boilers, Belting, etc.

HENCH & DROMGOLD'S



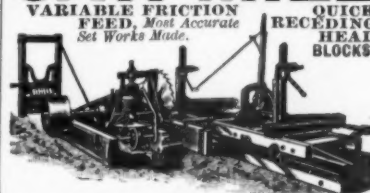
SAW MILL AND ENGINES

A wonderful improvement in Friction Feeds and Gig-Back. Back motion of Carriage three times as fast as any other in the market. Friction Clutch Feed, causing all the feed gearing to stand still while backing; great saving in power and wear. Write for circulars and prices; furnished free upon application. Also Spring Tooth Harrows, Hay Rakes, Cultivators, Corn Planters, Shellers, etc. Mention this paper.

HENCH & DROMGOLD, Manfrs., YORK, PA.

If you wish to keep posted on the progress of the South, read the Manufacturers' Record. Price \$4.00 a year.

THE FARQUHAR SAW MILL



PORTABLE, STATIONARY & TRACTION
Engines and Boilers a specialty. Send for catalogue to
A. B. FARQUHAR CO., Ltd., YORK, PA.

FRANKLIN F. DAVIS,
Contracting Engineer.

Steam Power Plants.

Saw Mills. Shingle Mills.

Logging Railroad Equipment.

Plans and estimates furnished on application.
406 Austell Building, ATLANTA, GEORGIA.

CREOSOTED

PILES, LUMBER
and CROSSTIES

Treated with Dead Oil of Coal Tar.

PINOLINE WOOD PRESERVATIVE.

PINOLINE ROOFING PAINT.

Highest Antiseptic Qualities. Insoluble in water.

Durable, Elastic and Cheap.

FOR PRICES WRITE

Fernandina Oil & Creosote Works, Fernandina, Fla.

WEST PASCAGOULA CREOSOTE WORKS,

West Pascagoula, Miss.

Situated on Pascagoula Bay and on the line of the Louisville & Nashville Railroad.

These works have been in operation for more than twenty years, were recently entirely rebuilt and enlarged, and are now prepared to execute all orders for creosoted piles and timber thoroughly impregnated with dead oil of coal tar. New cylinders 115 feet long. Capacity one million feet per month. Address

J. N. HUSTON,

Supt. West Pascagoula Creosote Works, West Pascagoula, Miss.

Richard P. Baer & Co.

Successors to

A. I. LYON & CO.

Room 55, MANUFACTURERS' RECORD BUILDING,
N. W. Cor. Lexington and North Sts.

BALTIMORE, MD.

Mill men with good hardwood lumber to offer for cash are invited to correspond with us.

LUMBER

WALNUT LOGS WANTED.

PRICE & COMPANY, BALTIMORE, MD. CLARKSBURG, W. VA.

Manufacturers of Oak, Etc., For Foreign and Domestic Markets.

Agents for Pardee & Curtin Lumber Co.'s

BAND SAWED POPLAR, ASH, WALNUT, CHERRY, ETC.



Cross section of cylinder in the new **COLUMBIA Sander**, showing simple and effective method of applying sand paper. Lots of other good points in this machine well worth knowing. Address sales department nearest you.

AMERICAN WOODWORKING MACHINE CO.

109 Liberty Street NEW YORK.
45 S. Canal Street, CHICAGO.
94 Pearl Street, BOSTON.
Church and Basin Sts., WILLIAMSPORT, PA.

CORDESMAN, MEYER & Co.

27, 29, 31 Central Avenue, CINCINNATI, OHIO.

PINK GRADES OF LATEST

**WOOD
WORKING
Machinery**

of Every Description.



For....

Planing Mills,
Furniture and
Chair Factories,
Carriage, Wagon,
Agricultural
Works, etc.

Write for Circulars and
Prices.

"Ironsides" Two Saw Lumber Trimmer.

A model of perfection in design, construction and efficiency.

Our circular tells all about it.

CHATTANOOGA MACHINERY CO.
1318 Market St., Chattanooga, Tenn.

FREE.

If you will give us your name and address we will mail you a Catalogue and Price-list of one of the largest lines of

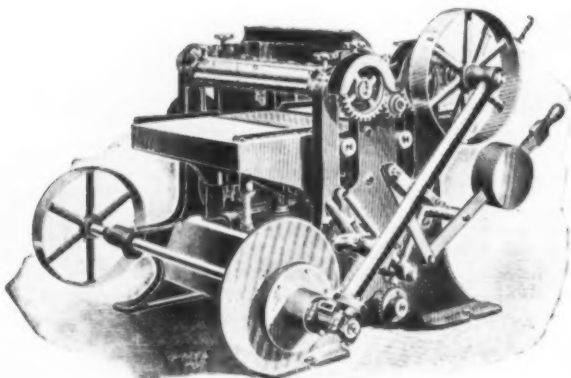
Wood Working Machinery

in the country.

CORDESMAN MACHINE CO.

26 to 36 Butler Street,

CINCINNATI, O.



VARIABLE FEED PLANER.

E. & B. HOLMES MACHINERY CO.

BUFFALO,
N. Y.

(OFFICE and FACTORY, 51-63 Chicago St.)

Woodworking Machinery.
COOPERAGE MACHINERY.

Holmes Variable Speed Countershaft.

SEND FOR OUR CATALOGUES.



SAWING MACHINERY

Double Cut-off Saws,

Scroll Saws, Saw Benches, Combination Rip and Cut-Off Saw Tables, Tilting Table Saw Benches, Steel Saw Arbors.

Patent Saw Gauges, etc.

Address **H. L. BEACH,**

Montrose Pa.



Improved Law's Pat.
Combined Shingle and
Heading Machine.



For the Best MACHINERY

FOR
SHINGLES,
HEADING and STAVES,
Veneer Cutters
and Improved

GAUGE LATHES

FOR
Turning Handles, Etc.

ADDRESS
Trevor Mfg. Co.

SUCCESSORS TO
TREVOR & CO.

Lockport, N. Y.

PATENT GROOVER OR DADO HEAD.



For cutting any width groove, from 1/4 inch to 2 in. or over. This groover consists of two outside saws, each of which is a groover in itself and as many inside cutters as required. The inside cutters are made 1-16, 1/4 & 1/2 inch thick so that any width groove measurable in sixteenths may be cut. The outside cutters are made 3/8 inch thick. It will cut a perfect groove, either with or across the grain, and will not leave a rough edge as in the case with ordinary groovers.

Can be used on any Circular Saw Mandrel.

HUTHER BROS.

SAW MANUFACTURERS,
234 Mill Street, ROCHESTER, N. Y.
California Saw Works, San Francisco, Cal.,
Agents for Pacific Coast.

How to Dry Lumber?

Information Given FREE. A Great DISCOVERY. The Most Perfect, Rapid and CHEAPEST Process for Green, Air Dried, Staves and Heading. State kind, thickness and amount wanted per day. Address:

THE A. H. ANDREWS CO.,

300-304 Wabash Ave., CHICAGO.

H. S. SERVOS, Gen'l Agt.
350 Greene Street, Brooklyn, N. Y.

The Cyclone Wheel

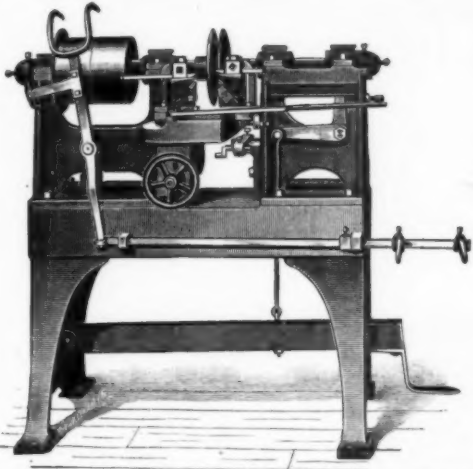
FOR
WOODWORKERS

For Saws and Tools
it Beats the World.
It will not Draw Temper.
Rapid Cutting.
Durable in Use.

Run Dry or in Water.
Has Great Strength.
Heat or Cold has No
Effect upon it.

SEND FOR CATALOGUE M.

VITRIFIED WHEEL CO., WESTFIELD, MASS.

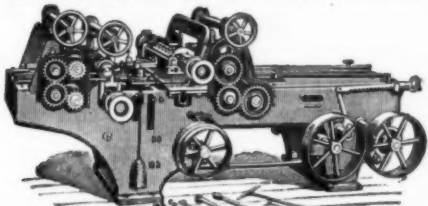


HERE is a Lathe for Turning Heads, Bottoms and Covers. Stock from 6 inches to 25 inches square can be worked in this Lathe, the edge being shaped to any desired pattern. The edge-shaping knives are furnished with caps to insure smooth cutting and are independently adjustable to any angle in a horizontal plane.

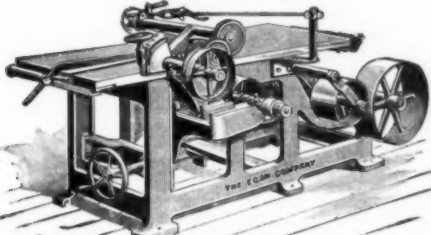
HEADING LATHE

"It does everything in the heading line but talk."—A RECENT CUSTOMER. We know this to be the best Lathe made for this work; you will know it if you investigate. See Catalogue B.

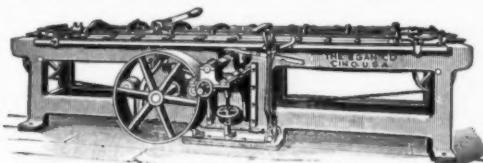
BAXTER D. WHITNEY, WINCHENDON, MASS., U. S. A.



No. 4 Surfacer and Matcher. Surfaces on two sides material up to 24 ins. wide, 6 ins. thick. Matches 14 ins. wide.



No. 4 Heavy Self-Feed Rip Saw. For material up to 12 ins. thick.



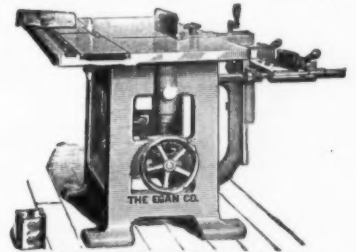
Automatic Glue Jointer. In sizes to joint from 8 1/2 to 18 1/2 ft. long.

Wood Working Machinery

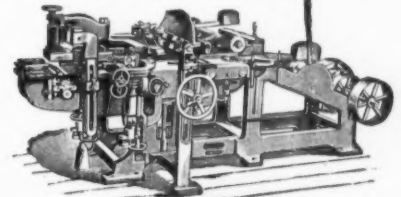
For Planing Mills, Furniture Factories, Spoke and Wheel, and Carriage and Wagon Makers, Etc.

An inspection of our 312 page Illustrated Catalogue, which we will gladly send you if you have use for it, will convince you that we make the most complete line and the Heaviest and Best Machinery on the market. Do you want a copy?

THE EGAN COMPANY,
228-248 W. Front Street, Cincinnati, O.



Universal Rip and Cross-Cut Saw. For Sawing, Planing, Jointing, Boring, Gaining, Tenoning and Panel Raising.



Seven-inch Four-Sided Molder. Heaviest and best Molder of its width made.



UNEXCELLED FOR
BAND SAWS.
ALL WIDTHS.

**TOUGHNESS
TEMPER
TENSION**

BRANCH HOUSES:
Chicago, Ill.
Louisville, Ky.
Boston, Mass.
San Francisco, Cal.

HENRY DISSTON & SONS,

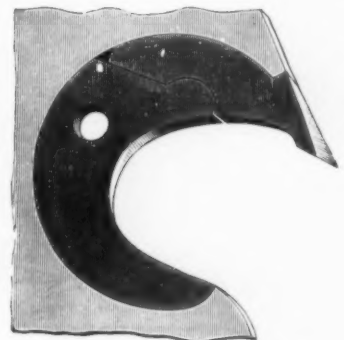
INCORPORATED,
PHILADELPHIA, PA.

Having had over fifty years' experience in manufacturing saws, we feel justified in saying that our goods are superior to all others, from the fact that we have, by constantly experimenting at great cost, arrived at a state of perfection in machinery, which can only be obtained by years of constant application and watchfulness.

Persons ordering circular saws will save themselves much trouble by exercising care in making out their orders; we furnish blanks to facilitate this, which can be had on application.

Send for Price List and Discount Sheet.

Send for New Edition of Lumberman's Handbook.



Disston's Inserted Chisel-Tooth Saw.

MANUFACTURERS

MADE FROM FINEST
SELECTED STEEL.
SOLID TOOTH.



E. C. ATKINS & CO.
Indianapolis, Ind.

BRANCH HOUSES }
Memphis, Tenn.
Chattanooga, Tenn.
Minneapolis, Minn.

MANUFACTURERS

TEMPERED BY
NATURAL GAS.
INSERTED TOOTH.



**ATKINS' SILVER STEEL BAND
SAWS TAKE THE LEAD.**

Write for Sawyer's Hand Book of
Saws and Saw Tools.

TRADE
SILVER STEEL
MARK

CIRCULAR, BAND, GANG, DRAG, CROSS-CUT, HAND AND SAWS
OF EVERY DESCRIPTION. CYLINDER SAWS RE-STEELLED.

USED BY THE
U. S. GOVERNMENT.

THE JENKINS Power Hammer.

It has no straps, springs, valves or other weak parts to give trouble.

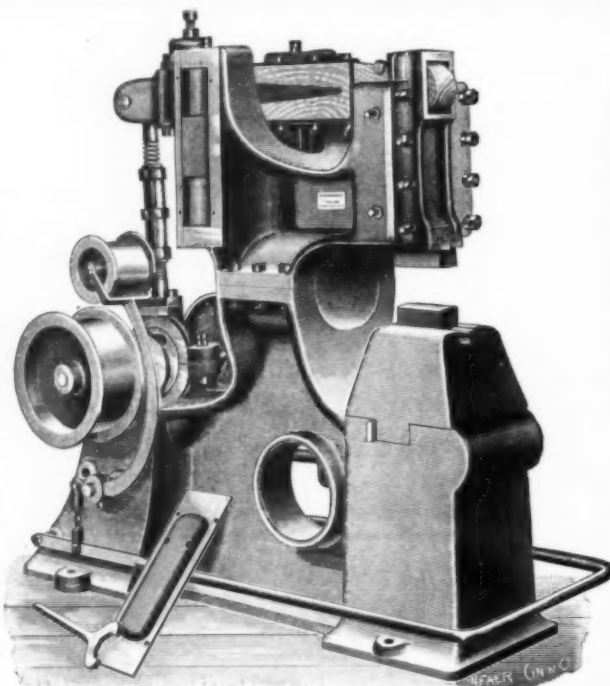
ITS WORK: { A Perfect Blow.
Perfectly Cushioned.

It Strikes a True, Perpendicular Blow.

Carriage makers, wagon makers, tool makers and all iron workers should look into the merits of this tool. It will make money for them.

Send for illustrated catalogue.

JENKINS & LINGLE,
BELLEFONTE, PA.



THE E. S. STILES PRESS CO.

20 Mill Street, Watertown, N. Y.

Designers and
Builders of

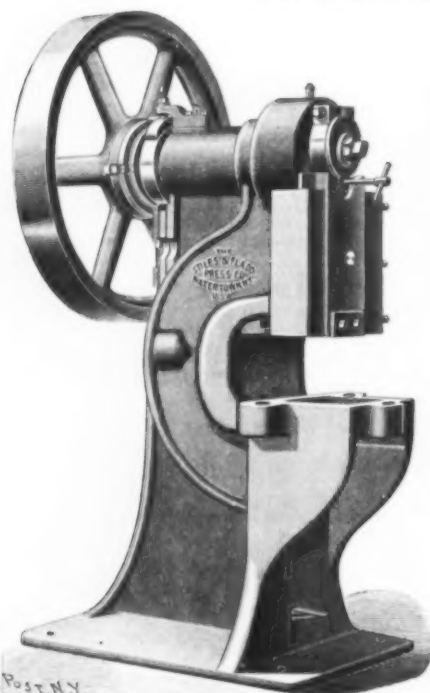
POWER PRESSES
DROP HAMMERS
DIES AND

Special Machinery
for Sheet Metal.

Adjustable
Incline
PRESSES.

Punching
and Forming
Presses.

Foot and
Screw
PRESSES.



No. 3 Punching Press.



No. 19 Adjustable Incline Press.

AMERICAN FIELD FENCING.

Made by AMERICAN STEEL & WIRE CO.,
PITTSBURGH, PA.

THE LEADING WOVEN WIRE FENCE.



No small wire in it.
Expansion and
contraction fully
provided for.

20 Different Styles.
We sell only one
dealer in a town,
thereby protecting
him in its exclusive
sale.

Write for Special
Fence Catalogue and
prices to agents.

Division, Field, Farm,
Hog, Cattle, Horse
and Sheep Fence.

Largest Fence Factory
in the world.



Duplex Covers and Inlets

Do not encroach upon lawn or require obstruction in the street to intercept water. Ironwork extends below frost line to protect brickwork from frost. Only inlet that supports sewer pipe and not supported by it. Adjustable to depth and inclination of curb. Large capacity.

GEORGE M. PIERCE, 8 Euclid Ave., CLEVELAND, OHIO.

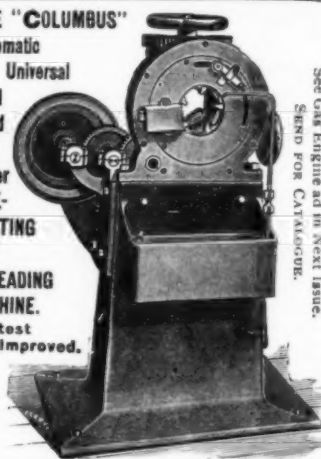
"PROVIDENCE"
Best in the World.

WINDLASSES. CAPSTANS

BUILT BY THE
AMERICAN SHIP WINDLASS CO., Providence, R. I.

THE "COLUMBUS"
Automatic
Universal

Feed
Hand
and
Power
PIPE-
CUTTING
AND
THREADING
MACHINE.
Latest
Improved.



See Gas Engine ad in Next Issue.
Send for Catalogue.

COLUMBUS MACHINE CO., 223 W. Broad St.
COLUMBUS, O.

The Standish Riveter

for
PATCHING
COTTON TIE
BANDS.



Indispensable to every
compressman in op-
erating a compress.

Manufactured by
CAPITAL CITY
MACHINE WORKS,
120 N. Spring Street,
COLUMBUS, O.

Send for Circular.

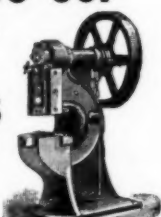
E. W. BLISS CO.

137 Plymouth St.,
BROOKLYN, N. Y.

CHICAGO:
96 W. Washington St.
400 page catalogue of our

PRESSES
Dies, Shears, Drop Hammers
and Special Machinery
FOR WORKING
SHEET METAL

Owners of
The Stiles & Parker Press Co. Correspondence
Solicited.
Manufacturers of the Waldron Friction Clutches.



SHEET IRON WORKERS!
WAGON MAKERS!

HAVE
YOU
SEEN
OUR

Drill Press?

Write for Circulars.

THE GLOBE MACHINE WORKS,
137 & 139 W. 2nd St., Cincinnati, O.

PERFORATED SHEET METALS

FOR SCREENING
Coal, Coke, Ore and Rock.



THE HENDRICK MFG. CO., LTD.
CARBONDALE, PA.

COTTON SEED SCREENS.

JANNEY, STEINMETZ & CO.

Drexel Building, PHILADELPHIA.

Iron and Steel

Special Manufactured Shapes,
Forgings, Turnbuckles, Etc.

STEEL BRIDGES, DOCKS, WHARVES,

and other Special Work.

Seamless, Welded

STEEL CYLINDERS, BOTTLES and TANKS

For High Pressure Gas, Compressed Air, Etc.

ALUMINUM for Steel Plants and for Other Uses.



All TAGS and LABELS on GENUINE COVERT SNAPS, WEB GOODS, ROPE GOODS and CHAIN GOODS bear the above TRADE-MARK. These goods are sold by all LEADING JOBBERS at manufacturers' prices.

Covert Mfg. Co. West Troy, N. Y.

369 Atlantic Avenue, Boston.

THE importance of the effectual protection against corrosion of the iron and steel columns, beams and girders now used in modern construction is recognized with increased interest by most of our architects and engineers. If not made a matter of specification these important parts of bridges or buildings may be coated with useless and sometimes injurious materials.

Lawrence's Permanent Paint for iron and steel is recognized by engineers, architects, bridge builders and railway companies as a standard coating for metal of the highest class; its merit and value has been tested and proven by time, and for protection, economy and permanence it has no equal.

The manufacturers will be glad to communicate full particulars on application to justify their suggestion that all specifications for iron and steel for structural purposes should require that

"The first or shop coat of Paint shall be Lawrence's Permanent Paint No. 2050, which is to be applied as it comes from the makers without the use of any additions. The second coat after erection shall be of the same material."

W. W. LAWRENCE & COMPANY.

Pittsburgh and Buffalo.

WM. ELLIOT.

ESTABLISHED 1876.

W. H. LOOMIS.

THE NATIONAL PAINT WORKS, Williamsport, Pa.



Manufacture only high grade Lead, Carbon, Oxide, Graphite and Asphaltum Paints, which are sold at their commercial value.

Write for quotations, which are based on current cost of raw materials.

100 William Street, New York,

ALDEN SPEARE'S SONS & COMPANY,

Contains one of the best disinfectants known to science. Can be applied by anyone and absolutely guaranteed not to crack, peel or turn yellow with age, as will oil paint. Write for catalogue B and price list.

FIREPROOF AND WATERPROOF.

CROWN COLD WATER PAINT,

You won't have to stand on your head to note the beautiful effects given by the use of our

BUT

You may have to stand on your head to read this ad.

FOR PAINTING MILLS, FACTORIES AND WORKSHOPS

Use Only Paints Based on **ZINC WHITE.**

Modern competition forces you to consider the appearance of your buildings, the health of your employees, and above all, economy in material.

Paints based on ZINC WHITE do not change color nor chalk off, are absolutely non-poisonous, and cost least, because they are the most lasting.

FREE.—Send for our practical pamphlet, "The Paint Question."

THE NEW JERSEY ZINC CO., 52 Wall St., NEW YORK.

WARREN'S ANCHOR BRAND NATURAL ASPHALT ROOFING.



REGISTERED TRADE-MARK.

We shall be pleased to furnish estimates for laying this roofing in any part of the country, also

ASPHALT FLOORS

Station Platforms, Driveways, Etc.

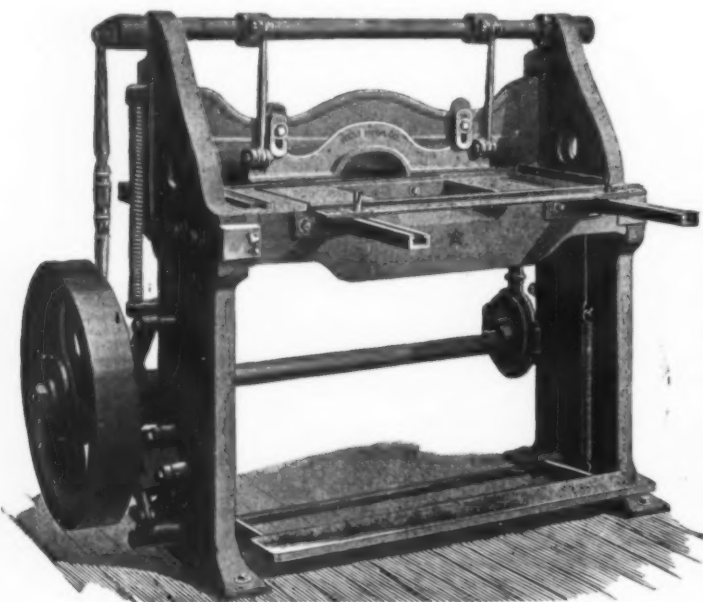
Asphalt flooring is coming into more and more general use in breweries, stables, school houses, warehouses, and in fact wherever a smooth, damp proof, dustless and sanitary flooring is desired.

For samples, estimates on work, and full information, address

Warren Chemical & Mfg. Co.

Established 1855.
Incorporated 1858.Importers and Refiners of Trinidad Asphalt,
Distillers of Coal Tar,
Manufacturers of Roofing and Paving Materials.

Also Contractors for

Asphalt Roofing and Flooring,
Pitch and Gravel Roofing,
Brick and Tile Roofing.Branch Offices:
BOSTON, MASS.: 12 Pearl Street.
UTICA, N. Y.: 85 Mann Building.
ROCHESTER, N. Y.: 343 Powers Building.
BUFFALO, N. Y.: 742 Guaranty Building.
CLEVELAND, O.: 325 Cuyahoga Building.
DETROIT, MICH.: 91 Moffatt Building.
TOLEDO, O.: 103 The Wasby.
CINCINNATI, O.: 64 Blymyer Building.
TORONTO, ONT.: 157 Bay Street.81 and 83 Fulton Street,
New York, U. S. A.

The Shears are made in all sizes up to 4 feet long; longer than 4 feet with back gear; are designed for cutting No. 16 iron and lighter. The parts are exceptionally strong, the legs and guides for cross-heads are in one solid piece. They are provided with improved clutch and automatic hold-down, also with front, bevel, back and side gauge.

Write for Discounts and Catalogue of

Power Presses. Double Seamers.

Adjustable Punching and Forming Presses.

Foot and Screw Press. Foot and Power Shears.

WEST MANUFACTURING CO.,

7th and Hudson Streets,

BUFFALO, N. Y., U. S. A.

LUDLOW SAYLOR WIRE CO.

Northeast Corner Fourth and Elm Streets, ST. LOUIS, MO.



ARTISTIC METAL WORK

In Brass, Wire and Wrought Iron. Elevator Enclosures and
Cabs, Bank and Office Railings, Grilles, Fences, etc.

ESTABLISHED 1844.

BUCK LEAD BEST WHITE PAINT.

ARCHITECTURAL
PLASTER ORNAMENTS.

SAMUEL H. FRENCH & CO.

PHILADLPHIA.

WIRE RAILING

AND
ORNAMENTAL WIRE WORKS
DUFUR & CO.

311 North Howard Street, BALTIMORE.

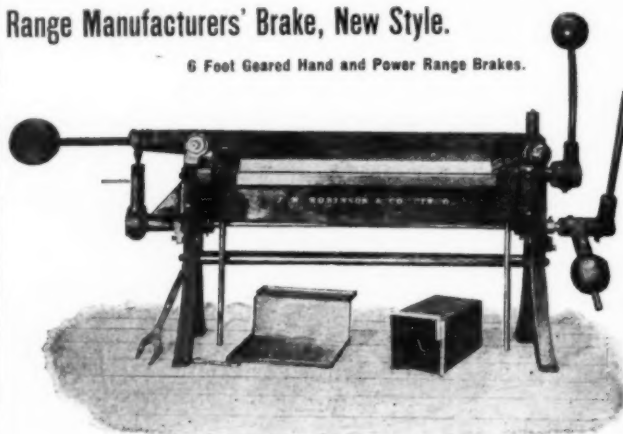
Wire Railing for Cemeteries, Lawns, Gardens,
Offices and Balconies; Window Guards, Tree
Guards, Wire Cloth, Sieves, Fenders, Cages, Sand
and Coal Screens, Iron Bedsteads, Chairs, &c.ELLIS & HELFENBERGER,
110 Senate Ave. INDIANAPOLIS, IND.

The Celebrated Green Mountain Sea Green Roofing Slate.

Acknowledged to be the most durable Roofing
Slate produced. ABSOLUTELY FIREPROOF. Secure
PURE SANITARY WATER by using our slate.Manufactured only by
WILLIAMS & SCHMID, Granville, N. Y.

Range Manufacturers' Brake, New Style.

6 Foot Geared Hand and Power Range Brakes.



J. M. ROBINSON & CO., Cincinnati, Ohio.

End
Closed.
Four
Foot
Open
End
Brake.

COMBINED PUNCH and SHEARS

Different styles for Squaring, Slitting and Trimming.
All sizes. Automatic
Self-Opening

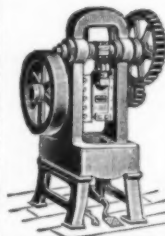
Bending Rolls

(revolutions)
Also Angle Iron Bend-
ing Rolls, Squaring
Shears, etc., machines
for working Sheet
Metal.BERTSCH & CO.
CAMBRIDGE CITY, IND.

THE TOLEDO MACHINE & TOOL CO.

TOLEDO, OHIO.

—MANUFACTURERS OF—

Power Punching
Drop Stamping
Trimming Riveting
EmbossingPresses with Automatic Feeds. Chain Presses and Machines
for Working Bar and Sheet Metals.COMPLETE OUTFITS FOR BICYCLE STAMPINGS, CAN MAKING, &c.
Send for 1897 Catalogue.Sole European Agents—SELIG, SONNENTHAL & Co., London.
Sole Agent in Germany—E. SONNENTHAL, JR., Berlin, Neue Promenade 5.
Pacific Coast Agent—V. J. A. REY, San Francisco, Cal.

ART STAINED GLASS.—PAPIER MACHE.

HIGH CLASS WORK ONLY.
FIGURE AND MEMORIAL WINDOWS
OUR SPECIALTY.CAPITALS, BRACKETS,
MOULDINGS, FESTOONS, ETC., ETC.
SOLE AGTS. FOR CHAS. EMMEL.

L. GROSSE ART GLASS WORKS, 922 Penn Ave., PITTSBURGH, PA.

PITTSBURGH PLATE GLASS CO.

LARGEST PRODUCERS OF PLATE GLASS IN THE WORLD.

Manufacturers of Polished Plate and Silvering Plate of all thicknesses.
SKYLIGHT AND FLOOR GLASS. GLASS BENDING A SPECIALTY.

Pittsburg: Carnegie Building. New York: 49-53 LaFayette Place. Boston: 30 Sudbury St. Philadelphia: 1012-1018 Filbert St. Chicago: 442-452 Wabash Ave. Cincinnati: 115-117 W. Front St. St. Louis: 12th & St. Charles Sts. Minneapolis: 124-128 N. 3d St. Detroit: 138-140 Jefferson Ave.

HAVE YOU SEEN GARRETT'S No. 44?

RAW HIDE
WATER PROOF
PAPER.



The best oiled sheathing made; will not dry out and become brittle; just the thing for lining under tin roofs that are subject to moisture.

C. S. GARRETT & SON, Paper Makers,

12 and 14 Decatur Street,

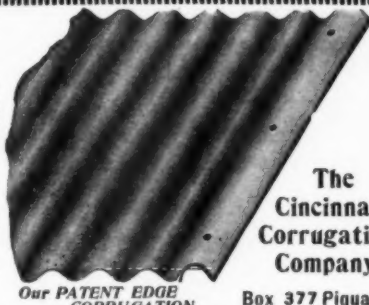
PHILADELPHIA.



T. H. BROOKS & CO. CLEVELAND, O.
FLOOR & SIDEWALK LIGHTS.
OF EVERY DESCRIPTION.
SEND FOR CATALOGUE.

MINNEAPOLIS, MINN.,
April 18, 1888.
The Cincinnati Corrugating Co.,
Piqua, Ohio.

Gentlemen:—We have yours of the 2nd inst. regarding the effectiveness of your Patent Edge Corrugation, and in reply would say that this material gives excellent satisfaction, both to ourselves and to our customer. It makes a very nice-looking job and is certainly as water-tight when lapped one corrugation side lap as the ordinary sheets are if lapped one and a half or even two corrugations at the sides of the sheets. At the same time quite a percentage of material is saved. We remain, Yours truly,
THE GILLETTE-HERZOG MFG. CO.
By Frank J. Llewellyn,
Chief Engineer.



The
Cincinnati
Corrugating
Company,

Our PATENT EDGE
CORRUGATION.

Box 377 Piqua, O.

THE EXPANDED METAL

SYSTEM OF FIRE-PROOFING

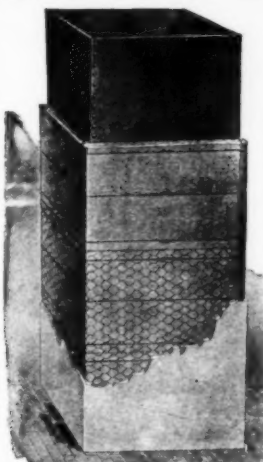
covers a construction of light concrete floors with imbedded sheets of heavy metal insuring strength for any requirement.

Expanded Metal Steel Plastering Lath

Is the standard metal lath in all markets. Used by the United States Government and all first-class architects throughout the world. Write for illustrated book containing full information, free by mail.

Northwestern Expanded Metal Co., - Chicago
Central Expanded Metal Co., - Pittsburgh
Eastern Expanded Metal Co., - Boston
Manhattan Concrete Co., New York and Boston
New York Expanded Metal Co., - New York
Southern Expanded Metal Co., - Washington
Expanded Metal Fireproofing Co., - Chicago
Merritt & Company, - Philadelphia

THE PHILADELPHIA STEEL ROOFING CO.
MANUFACTURERS OF
STEEL ROOFING AND CORRUGATED IRON.
514, 516 & 518, BEACH ST.
PHILADELPHIA PA.
SEND FOR CATALOGUE AND PRICES.



Flue covered with 1 1/2 in. sheet Fire-Felt, Hexagonal Wire Cloth and Cement Felting.

Results Assured

BY THE USE OF

Fire-Felt Non-Conducting Coverings.

Asbestos formed into felt is replete with cellular tissues and creates Fire-Felt. More confined air spaces in Fire-Felt than any other covering on the market.

ABSOLUTELY FIRE-PROOF. NOT AFFECTED BY MOISTURE. EASILY APPLIED.

Sheets for Boilers, Flues, etc., and Cylindrical Sections for Pipes.

H. W. JOHNS MANUFACTURING CO.

100 WILLIAM STREET, NEW YORK.

Philadelphia.

Chicago.

Boston.

ROOFING and SIDING

Steel and Iron; Painted and Galvanized of all kinds; also

CORRUGATED IRON,

Write us for prices and special inducements to the trade. HEDGE BROS. IRON ROOFING CO., Box 476 ANDERSON, IND.

NATIONAL

ROOFING & SUPPLY CO.

LOUISVILLE, KY.

Gravel Roofers,

Cement and Asphalt Pavers,

Building Papers,

Two and Three-Ply Ready Roofing.

Canvas Back

Put up in 500 and 250 sq. ft. rolls, 36 in. wide.

—Red Rope—

Tin caps and nails packed in each roll

Roofing & Sheathing

Waterproof. Air Tight. Durable.

Complete line of Building and Sheathing Papers

GARRETT-BUCHANAN CO.

9 Decatur St., PHILADELPHIA, PA.

Roofing Slate & Slate Black Boards

Builders, Contractors and Roofers.

Would like to correspond with you whenever you are in need of any ROOFING SLATE or SLATE BLACK BOARDS. Don't say SLATE is too expensive until you write me and ascertain what I will deliver it for f. o. b. at your station

DAVID McKENNA, Slatington, Pa.

WHEN EXPOSED TO SEVERE CONDITIONS THE P. & B. RUBEROID ROOFING SHOWS ITS TRUE VALUE. IT CONTAINS NO TAR OR ASPHALT AND IS NOT PAPER. THE BEST OF FELT IS ITS FOUNDATION AND IT IS ABSOLUTELY ACID, ALKALI AND WATER-PROOF, STRONG, DURABLE AND EASILY APPLIED, FOR USE ON DRY KILNS, FOUNDRIES, FACTORIES AND FERTILIZER AND PHOSPHATE WORKS IT IS ESPECIALLY RECOMMENDED. WILL NOT RUN WHEN EXPOSED TO GREAT HEAT. WRITE FOR PARTICULARS AND SAMPLES.

THE STANDARD PAINT CO.

Sole Manufacturers

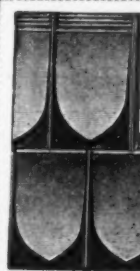
81-83 John St., NEW YORK.

Chicago Office, 189 Fifth Ave.

Pacific Coast Agents:

THE PARAFFINE PAINT CO.

116 Battery St., San Francisco, Cal.



Cortright

METAL ... SHINGLES

Are recognized as the best, both in Construction and Material used

Illustrated Catalogue Prices and Samples free.

Cortright Metal Roofing Co.
60 N. 23d St., Phila. 134 Van Buren St., Chicago.

ASBESTOS BUILDING AND SHEATHING FELTS.

GUTTA PERCHA WIRE EDGE ROOFING

Absolutely FIRE, WATER and WIND PROOF. SEND FOR SAMPLES AND PRICES.
Empire Paint & Roofing Co. 219 North 4th Street, PHILADELPHIA, PA.

Ironphalt Roofing

Guaranteed for 6 years when applied as per our Specifications.

SPECIALTIES: 2 and 3 ply Roofing, Insulating, Building and Sheathing Papers, Asphaltum, Pitch, Roof Paints, etc. Catalogue free.

ARMITAGE MFG. CO., Richmond, Va.

SLATE ROOFS

LOOK THE BEST. LAST THE LONGEST. Write for Free Book and lowest prices.

NAILS and CEMENT.

JOHN GALT & SONS,

253 Broadway, - NEW YORK.
915 N. Y. Life Building, CHICAGO.

TOOLS and SLATE DRESSERS.

FAIRMOUNT MACHINE CO. NORTHROP LOOMS

Twenty-second and Wood Sts., Philadelphia, Pa.

TEXTILE MACHINERY.

Plans Made and Factories Completely Equipped with Driving and Machinery.

New and Improved Looms.
Harness Motions.
Dobby Motions.
Warp Tension Attachment for Looms.
Warping Mills.
Improved Reels.
Dyeing Machines for Warp and Piece Goods.
Single and Double Warp Sizing Machines.
Warp Splitting Machines.
Plain Beaming Machines.
Plain Beaming Machines with Pressure Attachment.
Improved Presser Beaming Machines.

Cut Registers applicable to Beaming Machines.
Patent Cop Winding Machines.
Patent Bobbin Winding Machines.
Plain Spoolers.
Improved Presser Spoolers.
Four-Cylinder Napping Machines.
Cradle and Cone Indigo Mills.
Self-acting Wool Scouring Machines.
Fulling Mills.
Calendering Machines.
Hank Twisting and Stretching Machines.
Yarn Bundling Presses.
Loom Beam Trucks.

Shafting, Hangers, Pulleys, etc.

Adjustable Self-Oiling Bearings.
Patent Couplings.
Patent Self-Oiling Loose Pulleys.
Patent Self-Oiling Loose Pulleys with Patent Bevel Flange.
Improved Loose Pulley Bearings.
Patent Friction Pulleys.
Patent Friction Cut-off Couplings.
Gearing.

Improved Self Oiling Angular Driving.
Plain Self-Oiling Mule Driving.
Patent Adjustable Self-Oiling Mule Driving.
Vertical Shaft Transmission with Bearings which do run cool.
Carrier and Galleys Pulleys.
Guide or Binder Pulley Stands.
Patent Belt Tighteners.
Rope Transmission.

Sheave Wheels, any size required, for Hemp, Manila and Cotton Rope Driving.

FREIGHT ELEVATORS.

Foundry, Machine and Millright Work.

KILBURN, LINCOLN & CO.

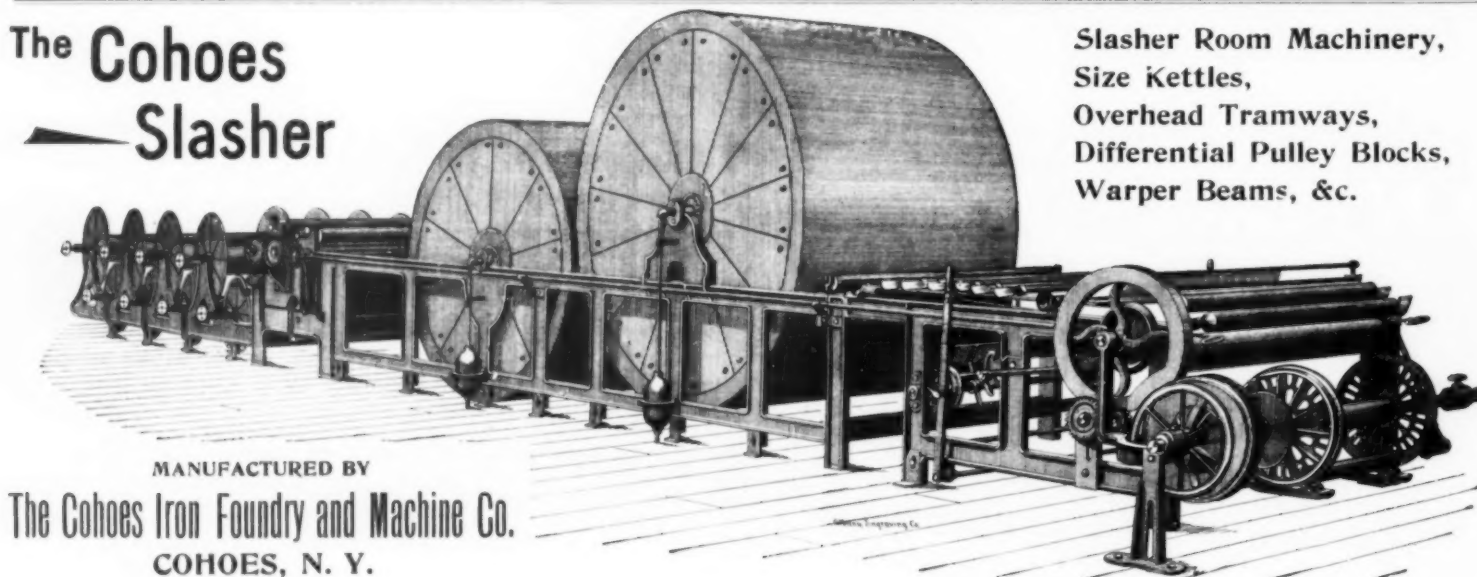
FALL RIVER, MASS.

LOOMS

For Cotton and Silk Weaving.

The Seaconnet Mills, Fall River, wove in 301 days of ten hours each, 14,329,219 yards of 64x64 goods on 928 of our "New High-Speed Looms," a daily average of 51,310 yards per loom per day.

The Cohoes Slasher



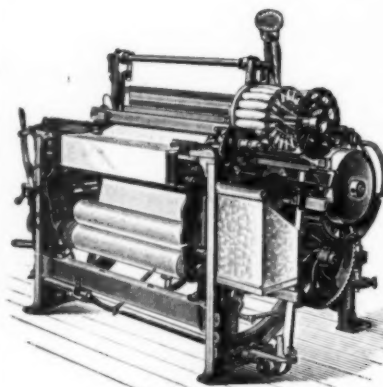
MANUFACTURED BY

The Cohoes Iron Foundry and Machine Co.
COHOES, N. Y.

Slasher Room Machinery,
Size Kettles,
Overhead Tramways,
Differential Pulley Blocks,
Warper Beams, &c.

RUNNING IN

SOUTHERN MILLS.



Tucapau,	-	-	-	468
Lockhart,	-	-	-	800
Gaffney,	-	-	-	1400
Meridian,	-	-	-	48
Steeles Mills,	-	-	-	300
Spartan,	-	-	-	1360
Whitney,	-	-	-	250
Pelzer,	-	-	-	1000
Henrietta,	-	-	-	100
Wilmington,	-	-	-	60
Henderson,	-	-	-	72
Victor,	-	-	-	150
Abbeville,	-	-	-	300
Granby,	-	-	-	14
Aiken,	-	-	-	12

WE ARE THE LARGEST MANUFACTURERS OF

Spindles, Spinning Rings, Separators, Warpers, Spoolers, Temples, etc.

INCREASED PRODUCT.

DECREASED COST.

Their Record Our Best Guarantee.

THE DRAPER COMPANY, Hopedale, Mass.

Reeds and Harnesses

WRITE FOR PRICES.

J. A. GOWDEY & SON,
PROVIDENCE, R. I.

ALSO CHICOPEE, MASS.

Sixty Years Established.

Steam Engines
and Boilers.

Ice Machines.

Open Hearth
Steel Foundry
Equipment.
Water Works.

COTTON COMPRESSES

STEAM AND HYDRAULIC.

THE VULCAN WORKS, Chester, Pa.

Rolling Mill Work.
Valves and Cocks
For Heavy Pressure
Cranes and
Accumulators.
Steam, Water and
Ammonia Fittings.
Iron, Brass and
Steel Castings.

QUEEN CITY SUPPLY CO.

Pachta, Pund & Co.
PROPRIETORS

No. 161, 163 and 165
West Pearl Street,
CINCINNATI, OHIO.

DEALERS IN Factory, Machine Shop
and Mill Supplies.

Agent for B. F. Sturtevant Co., Blowers and Exhausts; Boston Belting Co., Rubber Goods of all kinds; Jewel Belting Co., Leather Belt; Jno. A. Roeblings' Sons, Wire Rope; Grant Corundum Wheel Co., Emery Wheels; Magnolia Metal Co., Magnolia Babbitt Metal.

CHARLOTTE MACHINE COMPANY,

Sole Southern Agents for

Pettee Machine Works,

NEWTON, UPPER FALLS, MASS.

Manufacturers of
**Revolving Flat Cards,
 Coiler Railway Heads,
 Coiler Drawing Frames.**

H. S. CHADWICK, President and Treasurer.

CHARLOTTE, N. C.

ENGINEERS, CONTRACTORS

and Dealers in

COTTON MACHINERY,

and

COTTON MILL EQUIPMENT,**Electrical Machinery and****Electrical Supplies.**

Also Agents for

A. T. ATHERTON MACHINE CO., Manufacturers
 of Pat. Cotton Openers, Opener Feeders and Lappers.

FALES & JENKS MACHINE CO., Manufacturers
 of Spinning and Twisting Machinery, with Draper
 No. 2 and Sherman Spindles.

THE CORLISS STEAM ENGINE CO., Corliss
 Engines, High-Pressure, Triple Expansion, Com-
 pound and Condensing. Boilers, Heaters and Pumps.

JONES & LAUGHLIN'S Cold Rolled Steel Shafting,
 Compression Couplings, Hangers, Pulleys, Etc.

DELAHUNTY DYEING MACHINE CO.'S Dyeing
 Machines, for Dyeing Raw Stock, Cotton or Wool,
 Hosiery and Knit Underwear.

DRYING MACHINERY, for Drying All Kinds of
 Stock, Cotton, Wool, Yarns, Hosiery, Underwear
 and other materials.

HYDRO EXTRACTORS, Engine Driven or Belt
 Driven.

DAYTON GAS ENGINE AND MFG. CO.'S Gas
 and Gasoline Engines.

Correspondence solicited in regard to all mat-
 ters pertaining to our business.

Sole Southern Agents for

Easton & Burnham Machine Co.,

PAWTUCKET, R. I.

Manufacturers of
**Improved Upright Spoolers,
 Cop, Skein or Bobbin,
 Doubling Spoolers,
 New Self-Oiling Spooler Spindle.**

Special Southern Agents for

B. F. Sturtevant Co.,

BOSTON, MASS.

Manufacturers of
**The Sturtevant Blower System,
 Heating, Ventilating and Moistening Apparatus.
 Direct Current Generators and Motors.**

Sole Southern Agents for

Providence Machine Co.

PROVIDENCE, R. I.

Manufacturers of
**The "Hill" Self-Balancing Roving Frame and
 with other latest improvements.**

Sole Southern Agents for

**Crompton and Knowles
Loom Works,**

Builders of

**Looms for Weaving Fabrics of every
 variety and texture.**

Agents for

Curtis & Marble Machine Co.

WORCESTER, MASS.

**Cloth Shearing, Brushing, Singeing,
 Rolling, Folding, Measuring
 and Sewing Machines.**

We Sell

The Western Electric Co's

**Arc Generators
 and Electrical Supplies.**

Specifications and Estimates furnished for all kinds of
 Electrical Installations, including
 Power Transmission.

Agents for

**Cohoes Iron Foundry
and Machine Co.**

COHOES, N. Y.

**Slashers, Size Kettles and Sizing
 Machinery.**

Elevators and Hoisting Machinery.

AMERICAN SUPPLY COMPANY,

Formerly MYRON FISH & CO., of Valley Falls, R. I., and KENDRICK LOOM HARNESS CO., of Providence, R. I.

~~~~~MANUFACTURERS OF~~~~~

# Loom Harness and Reeds.

**OAK BELTING, LACE AND PICKER LEATHER,**

And Dealers in Supplies for Cotton, Woolen and Silk Mills.



Agents for JOSEPH NOONE'S SONS'

**Roller, Slasher and Clearing Cloths,**

Calf, Sheep  
 and Lamb

**Roller Skins****and Roll Coverers' Tools.**

WE HAVE UNEQUALLED FACILITIES FOR FURNISHING

**Shuttles and Heddle Frames,****WIRE HEDDLES AND WIRE GOODS**

Of all Descriptions.

**SPECIAL NOTICE TO WORSTED AND SILK MILLS.**--We manufacture both Worsted and Cotton-Machine Knit Mail Harness for Weaving  
 Fine Worsted and Silk Goods. Also a full line of Supplies for Jacquard Looms.

**Office and Salesrooms, 11-13 Eddy Street, Providence, R. I.**

FACTORIES:

PROVIDENCE and VALLEY FALLS, R. I.

PELEG W. LIPPITT, President.

JOHN E. KENDRICK, Vice-Prest.

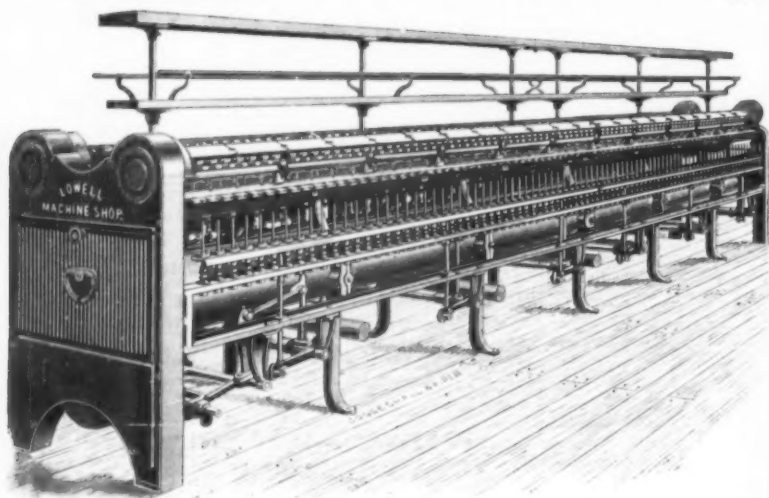
MYRON FISH, Treas.

JOHN A. CARTER, Sec'y

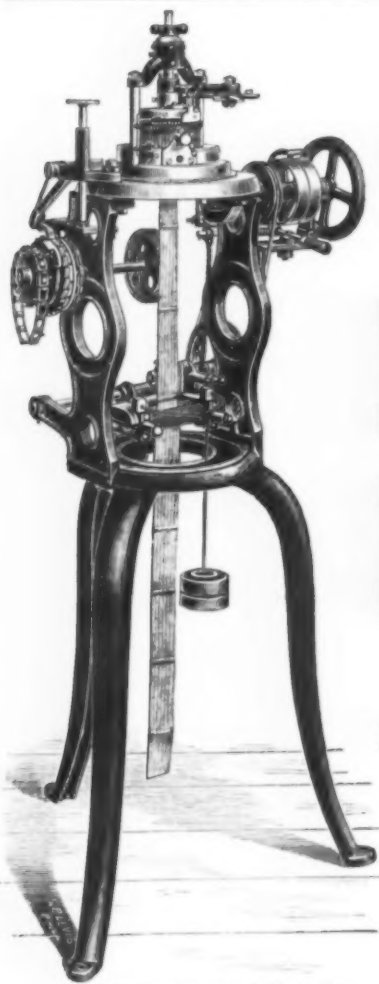
JOSEPH H. KENDRICK, General Manager.

**LOWELL MACHINE SHOP**

LOWELL, MASS.

**Builders of Cotton Machinery,**

Cards, Railway Heads, Drawing Frames, Fly Frames,  
Ring Frames, Spoolers, Warpers, Slashers, Looms,  
Twisters, Reels and Cloth Room Machinery.



AUTOMATIC RIBBERS.

ESTABLISHED 1865.

**SCOTT & WILLIAMS,**BUILDERS  
OF . . .

# Knitting Machinery

WORKS:

2079 East Cumberland Street,

PHILADELPHIA,  
PA.

Cable Address—SCOWILL.

**Spark Arresters**for Thresher, Saw Mills, Planing  
Mills and Cotton Gin Engines.Guaranteed to work satisfactorily  
on all engines that exhaust in the  
smoke stack.

THE SOUTH BEND SPARK ARRESTER CO.  
Office Corner Sample and Fellow Sts.  
SOUTH BEND, IND.

**EDWARD J. ETTING,  
IRON & STEEL,**Land Title Bldg., Broad & Chestnut Sts., Philadelphia, Pa.  
Storage Yard—Old Navy Yard.

REPRESENTING  
The Holland Company  
Girders and Tee Rails.

AGENT  
UNION MINING CO.  
MFRS. OF  
"Mt. Savage" Fire Brick

REPRESENTING  
Matthew Addy & Co.  
PIG IRON.

AGENT  
Dayton Coal & Iron Co.  
LTD.  
PIG IRON.

# SAVOGRAN

Cleans Wool, Mill Floors, ANYTHING.

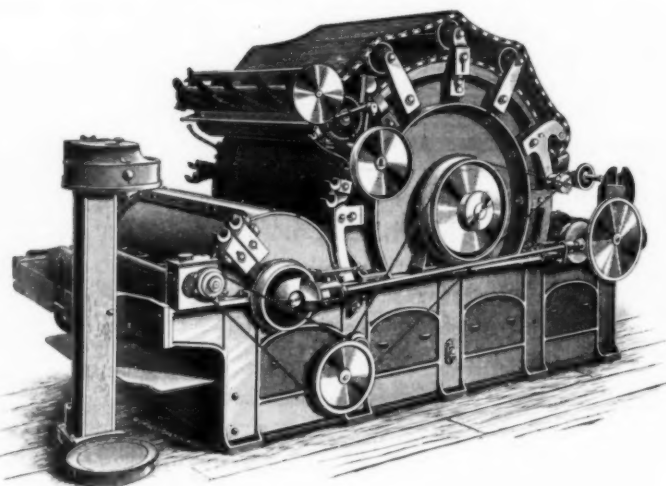
**FOR COTTON AND WOOLEN MILLS.**

Standard Articles for their Purposes.

INDIA ALKALI WORKS, 77 Broad Street, Boston.

**MASON MACHINE WORKS,**

Taunton, Mass.



Revolving Flat Cards, Combers,  
Railway Heads, Drawing Frames,  
Spinning Frames,  
Mules, Looms.

SOUTHERN AGENTS:

D. A. TOMPKINS CO., - Charlotte, N. C.

**BRANSON MACHINE CO.**

BUILDERS OF

# KNITTING · MACHINERY.

Hand or Power,  
Open Top or Hold Down,  
Semi or

$\frac{3}{4}$  Automatic Knitters,

All sizes and all gauges.

Plain, Welt or Two Feed

RIBBERS.

LOOPERS AND PARTS.

PRESSES AND BOARDS.

WINDERS AND BOBBINS.

HAND-FORGED STEEL CYLINDERS.

**BRANSON MACHINE CO.**  
506 St. John Street - - - - PHILADELPHIA, U. S. A.

Write for Information and Catalogue.

**CYPRESS WATER TANKS**

Best in the World. Send for Catalogue.  
Write us for Delivered Prices. H. F. Lewis & Co. Ltd.  
NEW ORLEANS, La. 216 Derance St.

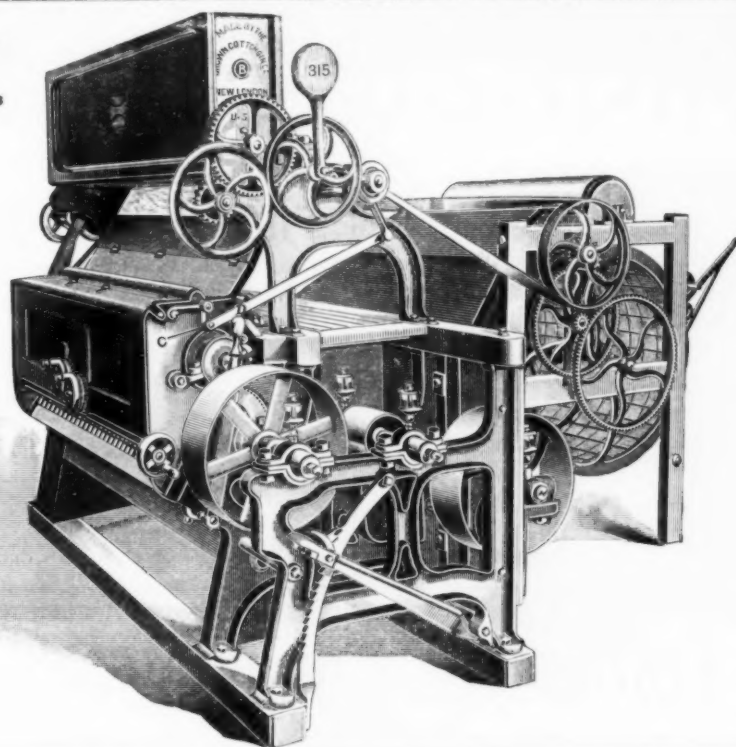
**M. ZIER & CO. Boiler and Sheet  
Iron Works.**

Manufacturers of Steam Boilers, Chimneys,  
Breechings and all kinds of Plate and Sheet Iron  
Work. Stand Pipes and Self-sustaining Smoke  
Stacks a specialty.

Estimates cheerfully furnished.  
Office and Works, S. W. cor. Pearl and Oak Streets,  
NEW ALBANY, IND.



Send now  
for full  
particulars  
and  
prices.



## The BROWN LINTER

It requires less power and less labor to run. Being entirely automatic in its operation, one man can easily take care of twenty of these machines.

Its Seed Board has the greatest range of adjustment, admitting of a change of output from 100 pounds of seed per hour to 1200 to 1500 pounds. One adjustment of two inches, which can be instantly made, will form a round Roll Box, making it possible to lint very damp seed or gin seed cotton, if desired.

The action of the lever for lifting Roll Box from the saws instantly stops the operation of the condenser as well as the feeder. In other words, the action of this lever stops the operation of every part of the machine simultaneously, thus producing an endless bat on the condenser roll of uniform thickness and width.

The Brown Cotton Gin Co., New London, Conn.

Latest Patented Improved

BUILT BY THE  
Carver Cotton Gin Company,  
EAST BRIDGEWATER, MASS.

We have made  
the famous  
Carver Gin  
84 years.

We make  
Cotton Seed  
Hullers,  
Linters, Gin  
Saw Filling  
Machines,  
Saw Gummers.

Nine-tenths of the Linters  
of the United States  
are of our make.

## COTTON SEED LINTER.

A. KLIPSTEIN & CO., 122 Pearl Street, NEW YORK.

BOSTON. PHILADELPHIA. PROVIDENCE. CHICAGO. CINCINNATI. HAMILTON, CANADA.

Aniline Colors, Chemicals and Dyestuffs.

DIRECT COLORS FOR COTTON DYEING.

REFINED CUTCH A. K. C.

Incorporated  
1866.



Charter  
Perpetual.

Issues Policies of Insurance after a Careful Inspection of the Boilers, Covering all Loss or Damage to Boilers, Buildings and Machinery, and Damage Resulting from Loss of Life and Personal Injuries Caused by Steam Boiler Explosions.

Full information concerning the plan of the Company's operations can be obtained at the  
COMPANY'S OFFICE, HARTFORD, CONN., or at any Agency.

J. M. ALLEN, President. W. B. FRANKLIN, Vice-Prest. J. B. PIERCE, Secretary.  
FRANCIS B. ALLEN, 2d Vice-Prest. E. J. MURPHY, M. E., Consulting Engineer.

|                              |                    |                       |
|------------------------------|--------------------|-----------------------|
| GENERAL AGENTS IN THE SOUTH. |                    | OFFICES.              |
| LAWFORD & McKIM,             | BALTIMORE, Md.,    | Chamber Commerce,     |
| C. C. GARDINER,              | ST. LOUIS, Mo.,    | 319 N. Fourth Street. |
| LOUIS V. CLARK & CO.,        | BIRMINGHAM, Ala.,  | 2021 First Avenue.    |
| W. S. HASTIE & SON,          | CHARLESTON, S. C., | 44 Broad Street.      |
| PETER F. PESCU,              | NEW ORLEANS, La.,  | 188 Gravier Street    |

Cottonseed Oil Machinery.

Tobacco Cutting Machinery.

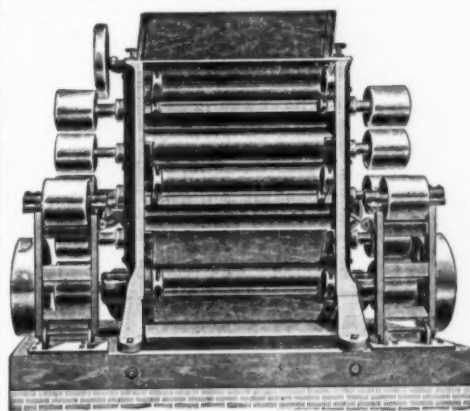
BRASS GOODS

for Engine Builders, Steam, Water and Gas Fitters. Write for Catalogue.

BUCKEYE IRON & BRASS WORKS,  
DAYTON, OHIO, U. S. A.



Alford's Athletic, Gymnasium  
and Sporting Goods,  
120 E. Baltimore St.  
Baltimore, Md. Guns and Ammunition



BEST CHILLED  
Iron  
Crushing  
Rolls  
Belt Driven,  
FOR  
Oil Mills.

Manufactured by

G. H. BUSHNELL PRESS CO., Man'rs Oil Mill Machinery. Thompsonville, Conn., U. S. A.

Cotton Seed Oil Mills

We are making Various Sizes, from the PLANTATION MILLS of five tons to the LARGE CITY MILL of 150 tons per day. Our Mills have all the Latest Modern Improvements in Machinery, and produce the very best results.

Hydraulic Cotton Presses

SIMPLE, COMPACT and VERY POWERFUL. Worked either by Hand or Steam-power. Not liable to get out of order and very durable. They are the BEST BALING PRESS made for Cotton, Wool, Rags, etc.

Threshers and Cleaners

For WHEAT, OATS and RICE. The Simplest, Cheapest and Best Made.

Information furnished upon application to

THE CARDWELL MACHINE COMPANY RICHMOND VA.

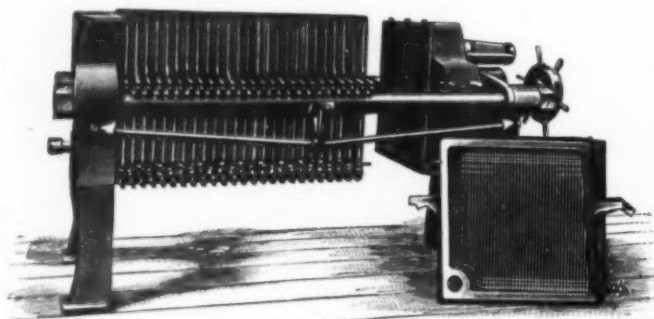
# SMITH-VAILE COTTON AND LINSEED OIL MACHINERY.

Steam Pumps.

Triplex Power Pumps.

Condensers and  
Vacuum Pumps.

Air Compressors.

Equipped with Modern Machinery  
To Produce Best Results.

## FILTER PRESSES....

For use in the production of Porcelain, Stoneware, Chemicals, Glycerine, Inks, Pharmaceutical Preparations, Pyroligneous, Phosphoric and Salicylic Acids, Earth and Chemical colors, White Lead, Whiting, Plaster, Glue, Gelatine, Graphite, Alumina, Anthracene, Berlin Blue, Bi-Carbonate of Soda, Cream of Tartar, Paraffine, Stearine and Vegetable Oils, Starch, Glucose, Sugar, Chocolate, Yeast.

... Write for Special Catalogues ...


THE STILWELL-BIERCE &amp; SMITH-VAILE CO.

General Offices and Factories:

Dayton, Ohio.

BRANCH HOUSES:

21 Light Street, BALTIMORE, MD.  
141 Broadway, NEW YORK.  
311 Dearborn Street, CHICAGO, ILL.  
341 Carondelet Street, NEW ORLEANS, LA.


## The American Cotton Oil Company

MANUFACTURERS AND REFINERS.

### Cotton-seed Products

Oil, Cake, Meal, Linters, Ashes, Hulls.

Cable Address: AMCOTOIL, New York.      THE AMERICAN COTTON OIL COMPANY, 46 Cedar St., New York.










# "Davis Coal" for Smithing and Forging

is unsurpassed. It cokes moderately, holds the fire well and is unusually low in sulphur. We deal direct with the consumer, and through excellent transportation facilities can make lowest prices.

DAVIS COAL AND COKE CO., Baltimore, Philadelphia, New York, Boston.

Write for Pamphlet.

SUPERIOR  
**COKE**  
AND  
**COAL**

The Standard Coal Co., Brookwood, Ala.,

Produces the Best Foundry Coke in the South, and the Highest Grade Washed Blacksmith Coal. Our celebrated "Mill-dale Seam" of Coal is superior for steam purposes. This Coal is used exclusively by the Government on its war vessels Pensacola and Mobile.

FOUNDRY COKE AND BLACKSMITH COAL OUR SPECIALTIES.

Correspondence from foundries, factories and users of steam coal invited.

Our Coast Agents, MOBILE COAL CO., A. C. Danner, Presdt., MOBILE, ALA.

CASTNER, CURRAN &amp; BULLITT,

General Agents for the

Celebrated POCAHONTAS - COAL.  
Smokeless Semi-Bituminous

MAIN OFFICE: 326 Chestnut St., - PHILADELPHIA, PA.

BRANCH OFFICES:

1 Broadway, New York.      70 Kilby Street, Boston, Mass.      36 Main Street, Norfolk, Va.  
Neave Building, Cincinnati, O.      Terry Building, Roanoke, Va.      Old Colony Building, Chicago, Ill.  
Beard of Trade Building, Columbus, O.      4 Fenchurch Avenue, London, England.

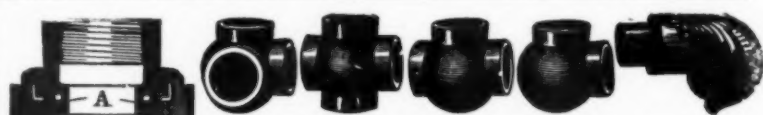
GOLDEN'S FOUNDRY &amp; MACHINE CO., Columbus, Ga.

Manufacturers of

Send for Price List  
and  
Discount Sheet.

Hangers, Shafting, Machine Moulded Pulleys.

COUPLINGS, PILLOW BLOCKS, FLOOR STANDS, COLLARS, &amp;c.



HENRY B. PANCOAST &amp; CO.

SUCCESSORS TO

**PANCOAST & MAULE,**

PHILADELPHIA, PA.

MANUFACTURERS AND DEALERS IN

WROUGHT-IRON PIPE AND FITTINGS,  
BRASS WORK AND TOOLS,  
BRASS AND IRON RAILING FITTINGS,  
"AMERICAN" SELF-PACKED UNIONS,  
"SKELETON" STOCKS AND DIES,  
STEAM GLUE HEATERS,  
STEAM RADIATORS AND COILS.

SEND FOR CATALOGUE.



A New Jaw  
about once a year  
will make this  
Cutter last until  
you forget when  
you bought it, at  
the only cutter maker's end.



## The Cleveland & Buffalo Transit Co.

### DAILY STEAMERS BETWEEN Buffalo and Cleveland, Via "C. & B. LINE,"

ALSO DAILY BETWEEN  
CLEVELAND, LORAIN,  
PUT-IN-BAY AND TOLEDO.

Elegant Fast Side Wheel Steamers.  
"CITY OF ERIE," (building) will go into com-  
mission about June 15th.  
"CITY OF BUFFALO," (new),  
"STATE OF OHIO,"  
"STATE OF NEW YORK,"

will, with the opening of navigation, about April  
1st, form a daily line between the above points.  
Tickets sold to all points East and West at  
lowest rates.  
Send 4 cents in stamps for handsome illus-  
trated pamphlet.  
Time Table and further information can be  
obtained by addressing

W. F. HERMAN, Gen'l Pass. Agent,  
CLEVELAND, OHIO.

## The Cleveland, Lorain & Wheeling RAILWAY.

SHORT and ONLY DIRECT LINE BETWEEN  
CLEVELAND, MEDINA, STERLING,  
WARWICK, MASSILLON, JUSTUS,  
CANAL DOVER, NEW PHILADELPHIA,  
UHRICHVILLE, ST. CLAIRSVILLE,  
BRIDGEPORT, BELLAIRE and WHEELING.  
DIRECT CONNECTIONS MADE AT  
CLEVELAND FOR NEW YORK, BOSTON,  
ALBANY and all points East, and at  
ELYRIA and LORAIN  
for points West.

W. R. WOODFORD, M. G. CARREL,  
Gen. Mgr. Gen. Pass. Agt.



Subscribe to the Manufacturers' Record.  
Price \$4 a year, or six months for \$2.

## The New England Railroad.

The Most Convenient Train for Busi-  
ness Men traveling between

**Boston and New York**

is the

**"Air Line Limited."**

This Elegantly Equipped Train leaves  
Boston from Park Square Station, 1.00  
P. M., Week-days only, and is due  
Grand Central Station, 6.00 P. M.  
Parlor Cars and Coaches are attached  
and Buffet Lunch served in either.  
There is no extra charge for seats in  
Coaches.

Same Service from New York.

City Ticket Office, 3 Old State House, Boston,  
W. R. BABCOCK, Gen'l Pass'r Agent.

**BE**  
**CO**  
**Solid Trains**  
**TO**  
**all Points**  
**WEST**

## Don't Make a Mistake.

A comparison of merits of different makes  
of Elevator Buckets will always result in a  
decision that the "SALEM" has no equal for  
long and satisfactory service. Send for price list.



The W. J. CLARK CO., Salem, Ohio, Sole Manufacturers.

R. S. DODSON, Proprietor.

R. A. DODSON, Manager.

## New Atlantic Hotel

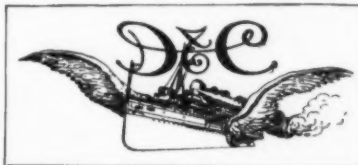
Rates, \$2.50 to \$4.00.

NORFOLK, VA.

FOR A SUMMER CRUISE TAKE THE COAST LINE

## To Mackinac

NEW STEEL  
PASSENGER  
STEAMERS



COMFORT,  
SPEED  
and SAFETY

The Greatest Perfection yet attained in Boat Construction—Luxurious  
Equipment, Artistic Furnishing, Decoration and Efficient Service.

## To Detroit, Mackinac, Georgian Bay, Petoskey, Chicago

No other Line offers a panorama of 460 miles of equal variety and interest.

FOUR TRIPS PER WEEK BETWEEN

**Toledo, Detroit and Mackinac**

PETOSKEY, "THE BOO" MARQUETTE  
AND DULUTH.

LOW RATES to Picturesque Mackinac  
and Return, including Meals and Berths.  
Approximate Cost from Cleveland, \$17;  
from Toledo, \$14; from Detroit, \$12.50.

DAY AND NIGHT SERVICE BETWEEN

**DETROIT AND CLEVELAND**

Fare, \$1.50 Each Direction.  
Berths, 75c., \$1. Stateroom, \$1.75.  
Connections are made at Cleveland with  
Earliest Trains for all points East, South  
and Southwest, and at Detroit for all  
points North and Northwest.  
Sunday Trips June, July, Aug., Sept. Oct. Only

EVERY DAY AND NIGHT BETWEEN

**CLEVELAND, PUT-IN-BAY AND TOLEDO.**

Send 2c. for Illustrated Pamphlet. Address  
A. A. SCHANTZ, S. P. A., DETROIT, MICH.

Detroit and Cleveland Navigation Company.

## ATLANTIC TRANSPORT LINE. NEW YORK, PHILADELPHIA and BALTIMORE to LONDON direct.

|                | Tons. |            | Tons. |
|----------------|-------|------------|-------|
| Massachusetts, | 7600  | Minnesota, | 5000  |
| Manitoba,      | 7600  | Maryland,  | 4250  |
| Mobile,        | 7600  | Missouri,  | 4250  |
| Mohawk,        | 7600  | Montana,   | 4250  |
| Mississippi,   | 5500  | Maine,     | 4150  |

BALTO. STORAGE & LIGHTERAGE CO.,  
403-409 Water Street, Baltimore.  
New York, 1 Broadway. Chicago, 234 La Salle st.  
Phila., 511 Bourse. St. Louis, 307½ Pine st.  
London, 108 Fenchurch st.

## MERCHANTS & MINERS'

Transportation Company.

STEAMSHIP LINES.  
For BOSTON and the EAST—Every Tues-  
day, Thursday and Sunday at 4 P. M.  
For PROVIDENCE and the EAST—Every  
Monday, and Friday at 4 P. M.  
For SAVANNAH and the SOUTH—Every  
Tuesday and Friday at 3 P. M.  
For NEWPORT NEWS and NORFOLK—Every  
Sunday, Monday, Tuesday and Friday at 4 P. M.  
First-class tickets include stateroom berth.  
Accommodation and Cuisine Unequaled.  
Freight Capacity Unlimited; careful handling  
and quick dispatch.

C. R. GILLINGHAM, Agent, Long Dock.  
A. D. STEBBINS, A. T. M.  
W. P. TURNER, G. P. A.  
J. C. WHITNEY, T. M.

General Offices—214 E. GERMAN STREET.

## BALTIMORE STEAM PACKET CO.

OLD AND RELIABLE

## BAY LINE.

Elegant Steamers Daily, except Sunday,  
from PIER 10 LIGHT STREET WHARF at  
5.45 P. M. for OLD POINT COMFORT,  
NORFOLK, PORTSMOUTH and ALL  
POINTS SOUTH. Connect at Portsmouth  
with Seaboard Air Line, solid train Ports-  
mouth to Atlanta. Close connection at Wel-  
don with Atlantic Coast Line. At Norfolk  
connect with Norfolk & Carolina, Norfolk &  
Southern, Atlantic & Danville, and Norfolk  
& Western Railroads, and with Old Domini-  
on Line for Newberne and Washington, N. C.  
Meals on European plan. Luxurious  
Staterooms, Electric Lights, Steam Heat.  
Berths free. Reserve staterooms in advance  
at 129 East Baltimore street.

Telephone 1435.  
JOHN R. SHERWOOD, General Manager.  
WM. RANDALL, Gen. Fgt. and Pass. Agent.  
E. BROWN, General Ticket Agent.

## BALTIMORE, CHESAPEAKE AND RICH- MOND STEAMBOAT COMPANY.

U. S. Mail Steamers Atlanta and Charlotte  
from Pier 10 Light Street.

"CHESAPEAKE LINE,"  
For the South.  
Leave daily (except Sunday), at 5.45 P. M. con-  
necting at Old Point Comfort with C. & O. Ry.,  
and at Norfolk with Atlantic Coast Line, South-  
ern Railway, Atlantic and Danville Ry., Norfolk  
and Western Ry., Norfolk and Southern R. R.,  
and Norfolk, Virginia Beach and Southern R. R.  
for all points South and West.

"YORK RIVER LINE,"  
For West Point and Richmond.

Leave Baltimore every Tuesday, Thursday and  
Saturday at 5 P. M. Through tickets to all points.  
TICKET OFFICE, 111 E. Baltimore St. and  
Southern Ry. Office, corner Baltimore and Cal-  
vert Sts., where reservation for Staterooms can  
be made and baggage checked.

GENERAL OFFICES, 530 Light Street.  
REUBEN FOSTER, E. J. CHISM,  
General Manager. General Ticket Agent.

**WE ARE  
HIGH GRADE  
ENGRAVERS  
BY EVERY PROCESS**

**FINE MACHINE ENGRAVING  
A SPECIALTY.  
PLACE NO ORDERS  
TILL YOU CORRESPOND  
WITH US.  
WE ILLUSTRATE CATALOGUES  
COMPLETE, OR GET OUT SINGLE  
CUTS ON SHORT NOTICE**

**THE  
BROWN-BIERCE  
COMPANY.  
DAYTON, OHIO.**

# Columbia

## Bevel-Gear CHAINLESS BICYCLES

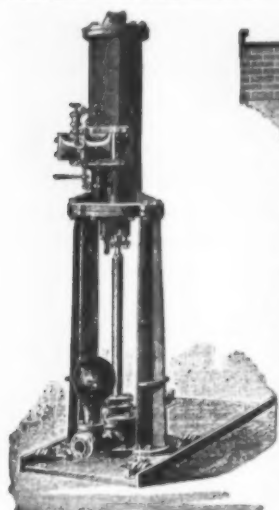
are the strongest, most improved and best form of cycle construction.  
DON'T BE CONFUSED BY THE WORD "CHAINLESS." There  
are many untried chainless devices on the market.

**COLUMBIA BEVEL-GEARS** are *The Original, The Standard.*  
Their superiority over chain wheels has been demonstrated on the  
road. Columbia Chain Wheels, \$75. Hartfords, \$50. Vedettes, \$40, \$35

**POPE MFG. CO., Hartford, Conn.**

Catalogue free from any Columbia dealer, or by mail for one 2c. stamp.

**Engravings**  
FOR THE MANUFACTURER, PUBLISHER, PRINTER  
BEST WORK~PROMPT DELIVERY~FAIR PRICES~  
**THE BALTIMORE ENGRAVING CO.**  
BALTIMORE, MD. U.S.A.



Artesian Well Pumps

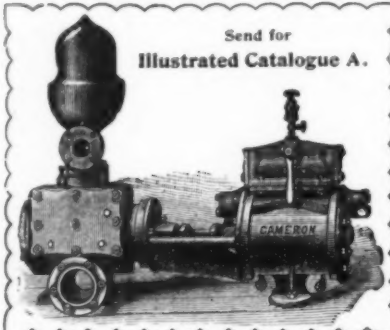


Mining Pumps

# CAMERON STEAM PUMPS.

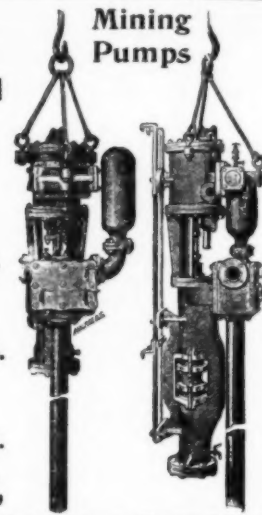
Pumps for  
Boiler-Feeding,  
Mines,  
Refineries,  
Breweries,  
Tanneries,  
Irrigating,  
Fire Purposes  
Railroads and  
Filling Tanks.

CRANK,  
FLY-WHEEL  
and VACUUM



Send for  
Illustrated Catalogue A.

SIMPLE,  
COMPACT,  
DURABLE,  
EFFICIENT.  
ADAPTED TO  
ALL PURPOSES.  
NO OUTSIDE  
VALVE GEAR.



Piston Pattern. Plunger Pattern.

PUMPS. THE A. S. CAMERON STEAM PUMP WORKS,  
Foot of East 23d St., NEW YORK.

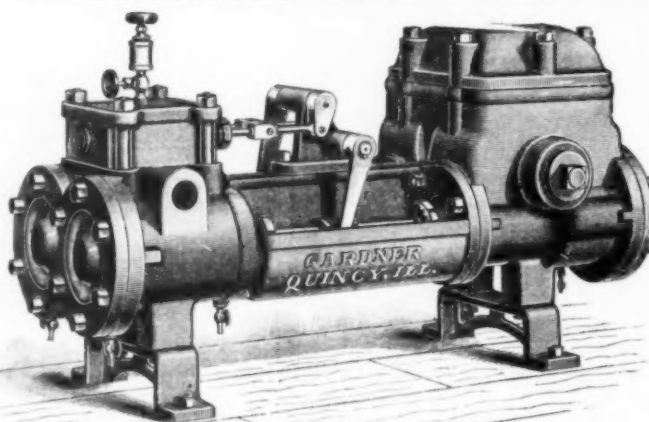
## Are You in Want

of anything in the Steam Pump line? If so, it might pay you to look into the merits of the "Gardner" Duplex. It is the best Pump for general purposes, for several reasons, which we will be pleased to explain if desired. Is of neat design, has all the latest improvements and strictly "up-to-date" in every detail. Cut of boiler feeder shown herewith.

Write for Catalogue "A."

The Gardner Governor Co.

QUINCY, ILL.



## PERRY ANDREWS & BRO.

Artesian  
Well Contractor  
and Driller,

Can Furnish Full Outfits  
and all Artesian Well  
Machinery,

19 Morrison Avenue,  
ATLANTA, GA.



WELL DRILLING MACHINERY,

MANUFACTURED BY

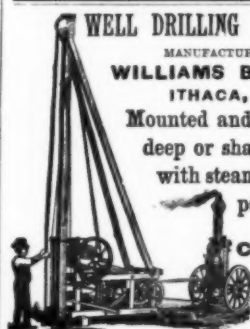
WILLIAMS BROTHERS,

ITHACA, N. Y.,

Mounted and on Sills, for  
deep or shallow wells,  
with steam or horse  
power.

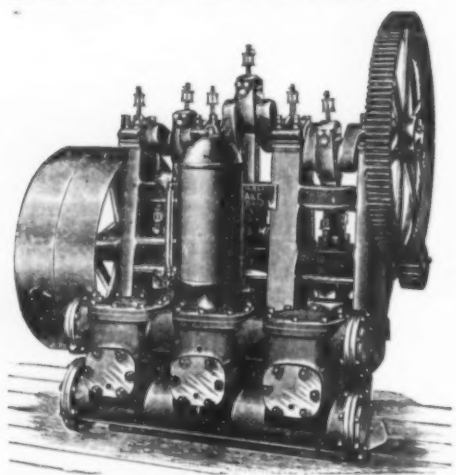
Send for  
Catalogue.

ADDRESS  
Williams Brothers  
ITHACA, N. Y.



**The PULSOMETER STEAM PUMP**  
"THE CONTRACTOR'S FRIEND."  
Often Imitated—Never Equaled. Over 20,000 in Use.  
RECENT IMPORTANT IMPROVEMENTS.  
The Handiest, Simplest, and Most Efficient Steam Pump for General Mining, Quarrying, Railroads, Irrigating, Drainage, Coal-washing, Tank-filling, Paper Mill, Sewer and Bridge Contractors' Purposes, etc., etc. Muddy or gritty liquids handled without injury to the Pump.  
**PULSOMETER STEAM PUMP CO., 135 Greenwich St., New York.**  
Catalogue on application. Correspondence solicited.

## SMITH-VAILE... STEAM AND POWER PUMPS



THIS CUT SHOWS OUR TRIPLEX PUMP.

For All Purposes.

Duplex and Single  
Steam Pumps.

Triplex Pumps,

LATEST AND MOST  
APPROVED DESIGNS.

SINGLE and  
DOUBLE ACTING.

Single Condensers.

Air Compressors.

HEAVY PRESSURE MINING PUMPS, Steam and Electrical.

OUR NEW CATALOGUE "C" GIVES PARTICULARS.

**THE STILWELL-BIERCE & SMITH-VAILE CO.**

General Offices and Factory: DAYTON, OHIO.

BRANCH HOUSES:  
21 Light Street, BALTIMORE, MD. 311 Dearborn Street, CHICAGO, ILL.  
141 Broadway, NEW YORK. 341 Carondelet Street, NEW ORLEANS, LA.

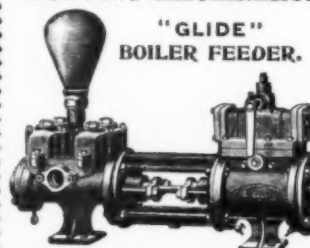
ADVERTISE IN MANUFACTURERS' RECORD.

THE JOHN H. MCGOWAN CO.

EVERY VARIETY

PUMPING MACHINERY.

"GLIDE"  
BOILER FEEDER.



BRANCH,  
RICHMOND, VA. Cincinnati, O.

**HALL STEAM PUMP CO.,**

BUILDERS OF

PUMPS FOR ALL PURPOSES

PITTSBURG, PA

**AIR COMPRESSORS**

FOR EVERY SERVICE.

NEW YORK ..... OFFICES AT ..... BOSTON  
BALTIMORE ..... PHILADELPHIA  
NEW ORLEANS ..... BIRMINGHAM

**"SNOW" STEAM PUMP WORKS,**  
BUFFALO, N. Y.

Write for Catalogue.

**DEAN BROS' STEAM PUMP WORKS.**



INDIANAPOLIS, IND. SEND FOR CATALOG AND PRICES



# WATER WHEELS

## and MOTORS

Impulse Wheels or Turbines to Suit Requirements of every case; Large Mills, Transmission, Railway and Lighting Plants or Power in Small Units for Domestic or other purposes.

**American Impulse Wheel Company of New York,**

Catalogue, Drawings and Quotations sent on application.

120 Liberty Street, New York.



This Engraving Represents a Pair of 45-inch McCormick Turbines

Mounted on Horizontal Shaft, Developing 500 Horse-Power, Recently Furnished the Augusta Factory, of Augusta, Ga., for Operating Their Cotton Mill.

**S. MORGAN SMITH CO.**

HYDRAULIC ENGINEERS,  
YORK, PA.

MANUFACTURERS OF

**McCormick Turbines**

Power Transmitting Machinery  
and Flume Work.

Estimates furnished for Complete Power Plants and Results Guaranteed

Some of our Recent Southern Customers. H. P.

|                                                  |      |
|--------------------------------------------------|------|
| The Clifton Manufacturing Co., Clifton, S. C.    | 3560 |
| The John P. King Mfg. Co., Augusta, Ga.          | 2700 |
| Anderson Wat., Light & Pow. Co., Anderson, S. C. | 2300 |
| The Mayo Mills Co., Mayodan, N. C.               | 800  |
| The Roanoke Mills Co., Roanoke Rapids, N. C.     | 780  |
| The Aiken Manufacturing Co., Bath, S. C.         | 700  |
| The Steele Mills Co., Rockingham, N. C.          | 500  |
| Reedy River Mfg. Co., Reedy River, S. C.         | 500  |
| Augusta Factory, Augusta, Ga.                    | 500  |
| Ida Yarn Mills, Laurel Hill, N. C.               | 430  |
| The Roberdel Mfg. Co., Rockingham, N. C.         | 400  |



### BURNHAM TURBINES...

Upright and Horizontal

Guaranteed to give the most power for least amount of water used of any wheel on the market.

#### SPECIAL ANNOUNCEMENT.

NORRISH FOUNDRY & MCH. CO.,  
Glen Rock, Pa.

BURNHAM BROS.,  
York, Pa.

The above firms having consolidated, the firm name hereafter will be

**NORRISH, BURNHAM & CO., Inc.**

SPECIALTIES—Burnham New Improved Standard Turbine, Norrish Roller Mills, Corn and Feed Mills, Regrinding and Corrugating Rolls, Power Transmitting Machinery.

Main Office and Works, Norrish, Burnham & Co., Inc., Glen Rock, Pa.

### RAND AIR COMPRESSORS

For All Purposes and of All Sizes.  
SIMPLE. DURABLE. ECONOMICAL.

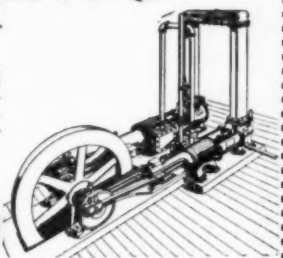
Our DUPLEX COMPRESSOR, Compound Air Cylinders, with Inter-Cooler and Compound Steam Cylinders, with Meyer Cut-off Valves, is the best construction for small and medium sizes.

Don't forget our ROCK DRILLS.

**RAND DRILL CO.**

100 BROADWAY, NEW YORK.

Send for Catalogue.

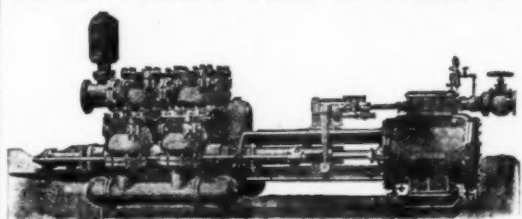


The  
Best,  
Heaviest  
and  
Most  
Durable.

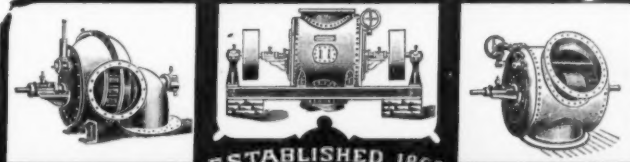
Send for  
Catalogue.

### MINE PUMPS OUR SPECIALTY.

Designed  
for  
Use in  
Acid  
or  
Muddy  
Water.



JEANESVILLE IRON WORKS CO., - Jeanesville, Pa.






ESTABLISHED 1862

## CHRISTIANA MACHINE COMPANY.

CHRISTIANA, PENN. U.S.A.

### ENGINEERS, FOUNDERS & MACHINISTS.


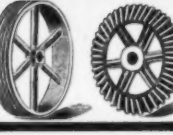





### TURBINE WATER WHEELS.

ADAPTED TO ALL DUTIES

### POWER TRANSMITTING MACHINERY.

GEARING ROPE WHEELS. FRICTION CLUTCHES.  
SHAFTING, PULLEYS, HANGERS, &c.



## WATER WHEEL

150 Styles and Sizes. Upright and Horizontal.

**36 YEARS' BUSINESS**

affords every facility for adapting them to

**ELECTRIC, MINING AND MANUFACTURING**  
purposes. Easy working balanced gate, and fine regulation. We guarantee highest power, with smallest quantity of water, at full and part gates. Successfully operating under heads of 2 to 400 feet. Write us for fine pamphlet and state your wants.

**THE JAMES LEFFEL & CO.**

SPRINGFIELD, OHIO, U. S. A.

# GALVANIZED STEEL - - ICE CANS

OVER 150,000

OF OUR  
Cans in Use and Distributed in 33 States and Foreign Countries, AS FOLLOWS

Alabama, Arizona, Colorado, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, New Jersey, New Mexico, New York, Nebraska, North Carolina, Ohio, Oklahoma Ter., Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia, Wisconsin, South America, British Columbia, West Indies, Honolulu.

ESTABLISHED 1861.  
INCORPORATED 1890.



Manufacturers of  
TANKS,  
RE-BOILERS,  
FILTERS,  
SKIMMERS,  
DISTRIBUTING  
TROUGHs, etc.

Either of Black Steel  
or Galvanized Iron,

FOR  
ICE MAKING  
AND  
REFRIGERATING PLANTS

Capacity 300 Per Day.

CHRIS. KIECHLER, Sr.,  
President.

THE KIECHLER MANUFACTURING COMPANY,

Power Sheet Metal Works,

WRITE FOR PRICES.

CINCINNATI, OHIO, U. S. A.

## The Robinson Patent Grinding Mill

Antwerp, N. Y., February 15, 1896.

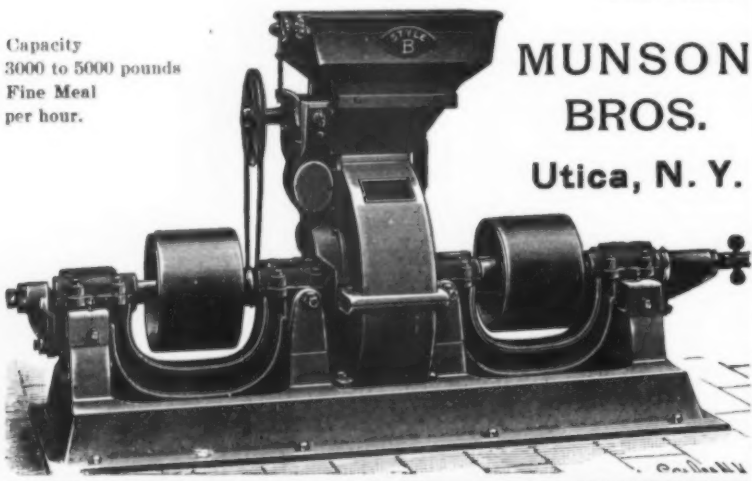
MESSRS. MUNSON BROS., Utica, N. Y.:

Gentlemen—We are very glad to say to you that the Robinson Mill exceeds all expectations and fully merits the high praise you gave it. Yesterday we ground with it 105 bushels of oats in 58 minutes, doing it splendidly. The least we can say for the Robinson is this: It is the most perfect grain grinder we have ever met with, and we say this after 30 years' experience in milling.

Yours truly,

M. AUGSBURY.

Capacity  
3000 to 5000 pounds  
Fine Meal  
per hour.



MUNSON  
BROS.

Utica, N. Y.

## SOFT BARS STEEL

RAILS, LIGHT  
SECTIONS  
HEXAGONS,  
TEES, ANGLES  
AND SPECIAL  
SHAPES.  
MERCHANT  
BARS  
ALL SIZES.

BILLET  
SHEETS  
TIN & TERNE PLATE

CORRUGATED, GAL-  
VANIZED, PAINTED  
OR PLAIN BLACK  
SHEETS.  
BLACK PLATE,  
TIN OR TERNE  
IN ALL  
GRADES.

ÆTNA STANDARD IRON & STEEL CO. AT BRIDGEPORT, OHIO, U. S. A.  
Works at Bridgeport and Mingo Junction, O.



As numerous as the sands on the seashore are  
the users of our

## SAND PAPERS,

ALL KINDS:

Flint Paper, Garnet Paper, Emery Paper & Emery Cloth.

The SUPERIOR QUALITY of our goods is unquestioned. **YOU RUN NO RISK.**

HAIR FELTING for Covering Boilers, Steam and Water Pipe, and  
Lining Refrigerators.

BAEDER, ADAMSON & CO.,  
730 Market Street, Philadelphia.

67 Beekman Street, New York.  
143 Milk Street, Boston.  
182 Lake Street, Chicago.



## BURR STONES

For all purposes  
Manufactured by us.

Also ROLLER MILLS, SMUT MACHINES and  
GENERAL MILL MACHINERY.

Established 1847.

B. F. STARR &amp; CO., Baltimore, Md.

## Canning House Machinery,

BOILERS, ENGINES, DYNAMOS and MOTORS.

## Complete Electric and Steam Plants.

Manufacturers HIGH-GRADE BICYCLES.

MARYLAND MFG. &amp; CONSTRUCTION CO.

336-342 North Street,

BALTIMORE, MD.

THE JINK  
WITH WHICH THIS PUBLICATION IS PRINTED  
IS MADE BY THE  
QUEEN CITY PRINTING INK CO.  
@ SOUTH ST. CINCINNATI, O.

## THE ROBINSON OILS

"they lubricate more, and outlast other oils."

High-Grade,  
Cylinder, Engine, Spindle,  
Dynamo Oils.

Oils for all types of Machinery.

GREASES.

WM. C. ROBINSON &amp; SON,

217 South Street,

BALTIMORE, MD.





**LIDGERWOOD  
HOISTING ENGINES**  
Are built to Gauge on the Duplicate Part System.  
QUICK DELIVERY ASSURED.  
**STANDARD** FOR QUALITY AND DUTY.  
FOR BUILDING PURPOSES, PILE  
DRIVING, EXCAVATING, Etc.  
**LIDGERWOOD MFG. CO.**  
96 Liberty Street, NEW YORK.  
Chicago. Cleveland. Philadelphia.  
Portland, Ore. Boston. New Orleans.

THE BROWN HOISTING AND CONVEYING MACHINE CO. CLEVELAND, O.  
MACHINERY FOR HANDLING  
COAL AND ORE.  
**CRANES**  
ELECTRIC, STEAM  
AND HAND POWER  
CRANES  
OVERHEAD  
TRAM RAILS

Contractors' Plant Mfg. Co. Ltd.

MANUFACTURERS OF

STEAM, HORSE and HAND POWER

**Hoisting  
Machines.**

DERRICK IRON and CONTRACTORS' SUPPLIES.

Manufacturers of Wire Rope.  
Mention this journal.

129 Erie Street, Buffalo, N. Y.



**OILLESS BEARINGS.**  
Metalized Loose Pulley  
Bushes require no oil or  
other lubricant, either at  
the start or occasionally  
afterwards. Will run per-  
fectly dry for years.  
North American Metalizing Co.  
West Ave. cor. W. 3d St.  
Long Island City, N. Y.  
Send for Loose Pulley Cir-  
cular No. 8.

Subscribe to the Manufacturers' Record.  
Price \$4 a year, or six months for \$2.



The John F. Byers Machine Co.

RAVENNA, OHIO.

HOISTING ENGINES,  
LOCOMOTIVES,

DERRICK  
CARS,  
DERRICK  
IRONS,

Write for  
Catalogue E.



**R. D. WOOD & CO.** ENGINEERS,  
IRON FOUNDERS,  
MACHINISTS,  
No. 400 Chestnut Street,  
PHILADELPHIA, PA.  
Constructors of GAS AND WATER WORKS.

Manufacture Every  
Description of **CAST IRON PIPE.**

Special Castings, Cutting In Specials.  
**MATHEW'S SINGLE AND DOUBLE VALVE FIRE HYDRANTS.**  
Eddy Valves, Valve Indicator Posts.

GAS HOLDERS AND GAS MACHINERY, Hydraulic Cranes, Presses, Lifts, etc. Turbine  
and Water Power Pumps. Heavy Special Machinery. Sugar House Work.

**CHAPMAN VALVE MFG. CO.**

MANUFACTURERS OF

STEAM, GAS and WATER VALVES and GATES.

**FIRE HYDRANTS**

With or without Independent Valves.

All Valves and Hydrants Furnished with Babbitt Metal  
Seats and Non-Corrosive Working Parts.

Send for Illustrated Descriptive Catalogue and Prices. All Work Guaranteed.

All Genuine Chapman Valves bear our Name, Trade Mark and Monogram

General Office and Works: INDIAN ORCHARD (Springfield), MASS.

Treasurer's Office: 78 KILBY ST., BOSTON.

Chicago Office: 14 N. CANAL ST.

New York Office: 38 FLATT ST.

**THE LUDLOW VALVE MFG CO.**

SEND FOR  
CATALOGUE.

TROY, N. Y., U. S. A.

MANUFACTURERS OF

Valves and Fire Hydrants,

DOUBLE AND SINGLE GATE VALVES,

1/2-inch to 60-inch,

FOR LIGHT AND HEAVY PRESSURE,

ALSO

Vertical and Horizontal Check Valves,

Foot Valves, Air Valves, and Yard  
and Wash Hydrants.



**WEBBER**

PATENT

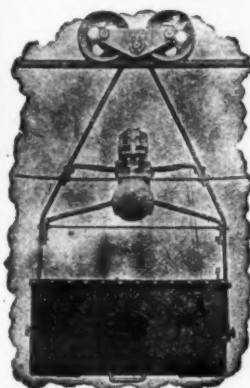
**COMPRESSION GRIP**

is used only on the Patent

**Bleichert**

WIRE ROPE

**Tramway**



No lugs or knots of any kind  
required on the traction rope,  
giving longer service, and saving  
in repairs.

and others, manufactured by

**The Trenton Iron Co.**

TRENTON, N. J.

ENGINEERS AND CONTRACTORS.

And sole licensees in North America for the Bleichert System. Also, Wire  
Rope Equipments for surface and underground Haulage, Trans-  
mission of Power, etc. Illustrated book upon application

NEW YORK OFFICE—Cooper, Hewitt & Co., 17 Burling Slip.

CHICAGO OFFICE—1114 Monadnock Building.

**Wire Ropes**

For Tramways, Shafts, Slopes and Planes,  
Quarries, Elevators, Ferries . . .

**OF IRON AND STEEL.**



Steel Cables for Street Railways.

Galvanized Iron and Steel Ropes for Derricks and Dredges.

**THE HAZARD MFG. COMPANY,**

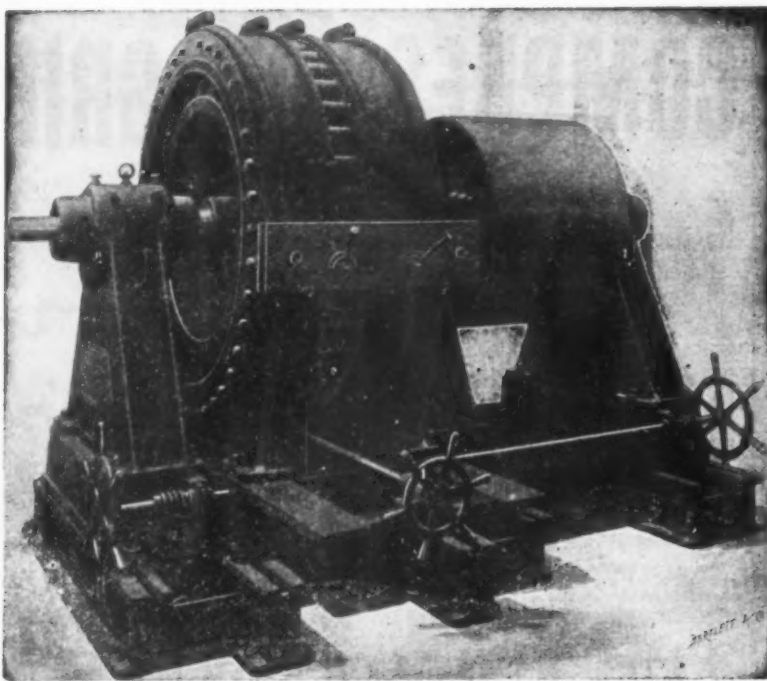
General Office and Works,

WILKESBARRE, PA.

New York Office and Warehouse,

50 DEY STREET.

# MULTIPHASE GENERATORS



## For Lighting and Power.

These machines are built for standard frequencies requiring no change in existing transformers, line equipment or interior wiring.

Perfect design and the use of condensers overcome the difficulties of "false currents" and greatly increase the capacity of a given system of wiring.

The two-phase system being the simplest, is best adapted for new installations or additions to existing plants.

Three-phase apparatus for extremely long distances.

These dynamos mark the extreme of simplicity.

No collector rings, no brushes, no moving wire.

The rotating inductor is solid steel and iron.

No band wires to break, no wire to abraid.

The armature is stationary.

Interchangeable machine-wound coils.

Perfect ease of repair.

No dismantling of the machine to get at any part of it.

The bearings are very large and of the most approved self-oiling, self-aligning type.

The stationary field coil is wound on a copper spool, heavily insulated, and of such low self-induction that induced break-currents cannot hurt it.

## STANLEY ELECTRIC MFG. CO.

Main Office—PITTSFIELD, MASS.

### BRANCH OFFICES:

ANDERSON, S. C.

NEW YORK, Rooms 1006 and 1007 Empire Bldg.  
Broadway and Rector St.

BOSTON,

Equitable Building.

CHICAGO,  
1506 Marquette Building.

SAN FRANCISCO,  
106 Market Street.

ST. LOUIS,  
Western Elec. Supply Co.

## Direct Current Dust Proof Motors,

### For Crane and Elevator Service.

The Same General Design as the Westinghouse Multipolar Generators and Motors—so widely and favorably known.

Westinghouse Electric & Mfg. Co., Pittsburg, Pa.

New York, Boston, Chicago, Philadelphia, St. Louis, San Francisco, Buffalo, Syracuse, Atlanta, Tacoma. Mountain Electric Co., Denver. For Canada, Ahearn & Soper, Ottawa. Westinghouse Electric Co. Ltd., 32 Victoria St., London.



Safety  
Economy  
Simplicity  
Durability  
Reliability

The name of  
**WESTINGHOUSE**  
is a guarantee.

# High Grade Incandescent Lamps.

With or Without Tips. 50, 110, 220 Volts. Of any Candle Power. Mounted in Standard Bases.

We offer our Lamps in competition with any others on the market.

**The Highest Development** in Life, Maintenance of Candle Power,  
Commercial Efficiency and Good Workmanship **Are What We Have to Offer.**

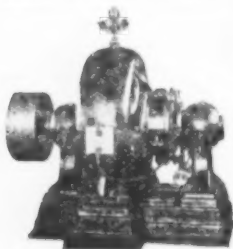
We make no claim to wonderful inventions revolutionizing the art, or to the employment of all the lamp experts available.

SERIES LAMPS FOR ANY SERVICE OR SOCKET.

## THE UNITED ELECTRIC IMPROVEMENT CO.

Responsible representatives wanted in all large cities.

Alleghany Ave. & Nineteenth St., PHILADELPHIA, PA.



## GENERATORS and MOTORS THE CARD ELECTRIC CO., MANSFIELD, OHIO.

Slow and medium speed multipolar MOTORS and DYNAMOS for belted or direct connected service. Automatic safety and limit switches. Automatic and reversing CONTROLLERS and reversing switches for PUMP and ELEVATOR equipment. Multipolar Electroplating Dynamos. Best on earth. WRITE FOR CATALOGUES.

### SALES AGENCIES:

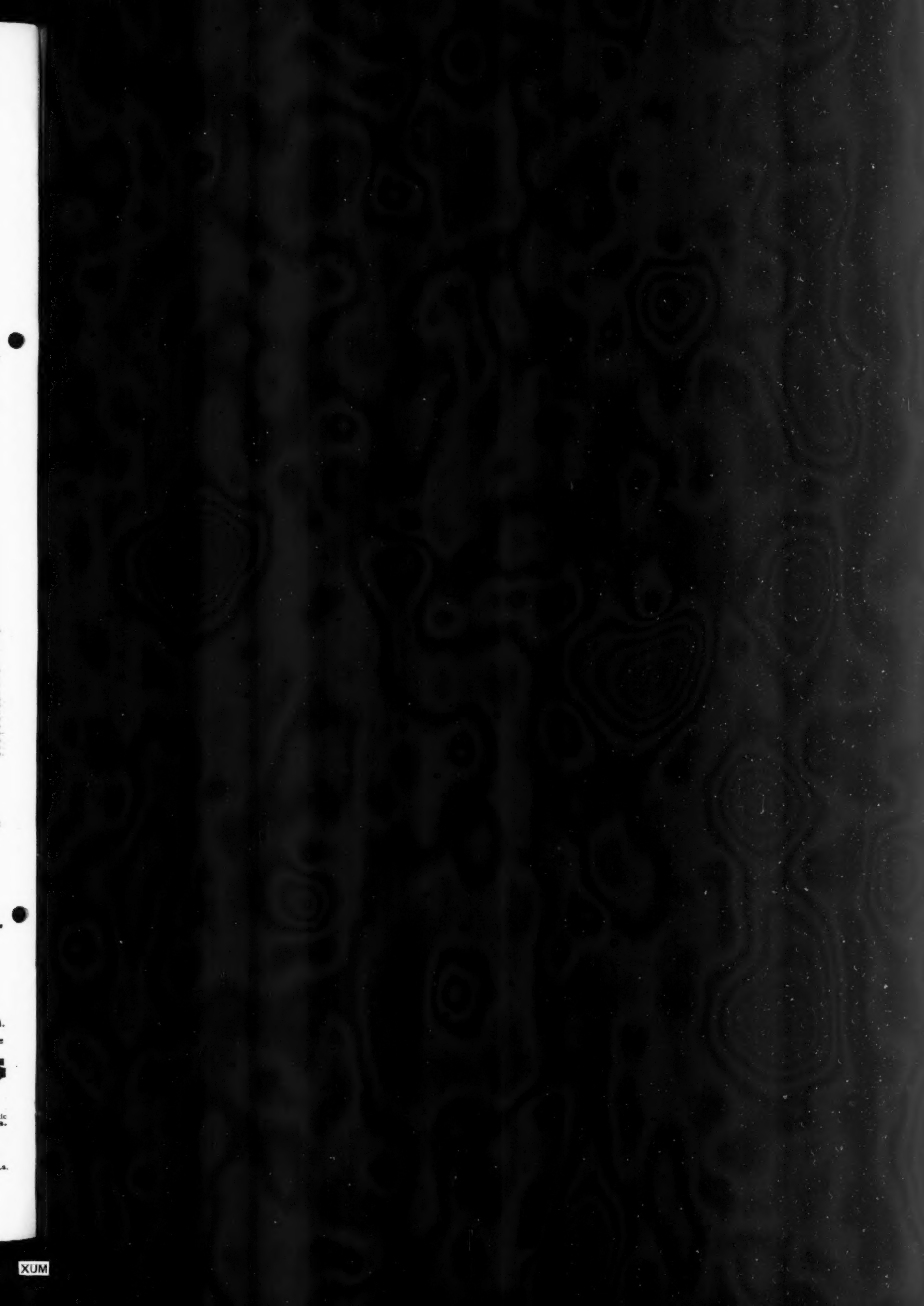
15 Cortlandt Street, New York  
1124 Marquette Building, Chicago.  
609 Smithfield Street, Pittsburgh, Pa.

48 Wade Building, Cleveland, O.  
810 Neave Building, Cincinnati, O.  
43 Monroe Street, Memphis, Tenn.

1521 Stout Street, Denver, Colo.  
470 Syndicate Arcade, Minneapolis, Minn.  
169 W. Water Street, Milwaukee, Wis.

109 N. 9th Street, Lincoln, Neb.  
1009 Texas Avenue, Houston, Texas.  
169 Elm Street, Dallas, Texas.  
341 Baronne Street, New Orleans, La.



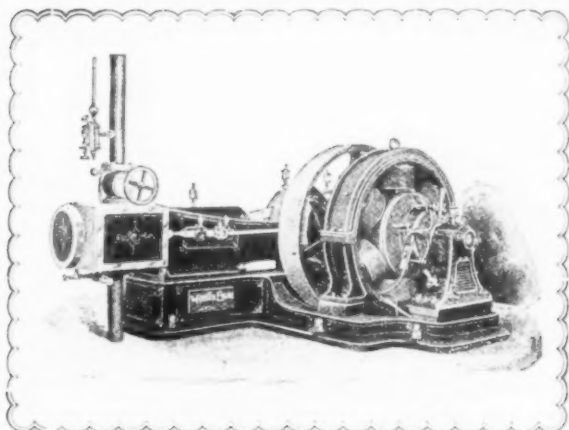






# DIRECT - - DYNAMO CONNECTED

For Lighting and Power.



The "WOOD" Dynamo embodies all the latest improvements in electrical machinery, among the most important being quick response to varying conditions of load, with sparkless commutation, voltage remaining constant, at the same time having highest attainable efficiency, generous commutator and brush surface permitting the use of carbon brushes, insuring long life.

## FORT WAYNE ELECTRIC CORPORATION

FORT WAYNE, INDIANA.

### BRANCH OFFICES:

New York City, 115 Broadway.  
Chicago, Ill., 621-625 Marquette Bldg.  
Philadelphia, Pa., 104 The Bourse.  
Boston, Mass., 17 Federal St.  
Rochester, N. Y., Powers Bldg.  
San Francisco, Cal., 18 Second St.  
Pittsburgh, Pa., 918 Park Bldg.

New Orleans, La., 715 Perdido St.  
Omaha, Neb., 1403 Farnam St.  
St. Paul, Minn., 207 Newspaper Row.  
Cincinnati, O., 402 Neave Bldg.  
St. Louis, Mo., 321 Security Bldg.  
Atlanta, Ga., 25 Marietta St.

Export Department, 115 Broadway, New York City.

## SMETHURST & ALLEN,

W. A. SMETHURST.  
RODNEY D. ALLEN.

1310 BETZ BUILDING,  
PHILA., PA.

Long Distance Telephone 4839.

## Electric Railway Contractors

Complete Electric Light and Power Installations. Electric Railway Work a Specialty.



## COMMUTATORS

BUILT AND REFILLED  
FOR ANY MACHINE.

## COMMUTATOR SEGMENTS

Assembled Ready to Place on Shell.

We guarantee our work to be A1 in every way, and  
will make good, at any time, any defect that may occur.

F. E. HOMER & CO., BELDEN ST., CLEVELAND, OHIO.

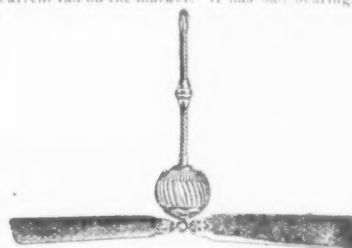
## BUYERS

OF ELECTRICAL MACHINERY

See our large ad in last and next issue.  
NORTHERN ELECTRICAL MFG. CO.  
MILWAUKEE, WIS.

## Standard Electric Ceiling Fans.

The most durable and most economical direct  
current fan on the market. It has ball bearings.



Manufactured by  
The ROBBINS & MYERS CO.  
SPRINGFIELD, OHIO.

Agents wanted in unoccupied territory.



## The ORATOR AND Improved Hunnings

solid back dust transmitters  
in Wall, Desk and Cabinet  
Styles. They are Convenient,  
Durable and the best  
of talkers.

A trial will convince anyone  
of their superiority on either  
short or long distance work.  
Anyone can make an instrument  
that will work well at  
first, but to produce one that  
will continue to meet every  
proper demand is quite another  
problem.

The ORATOR will.

MANUFACTURED BY

The RAWSON ELECTRIC CO.

ELYRIA, O., U. S. A.

THE ORATOR.

"PURITY-SOLIDITY-DURABILITY."

MITCHELL TEMPERED COPPER CO.

CORRY PA.

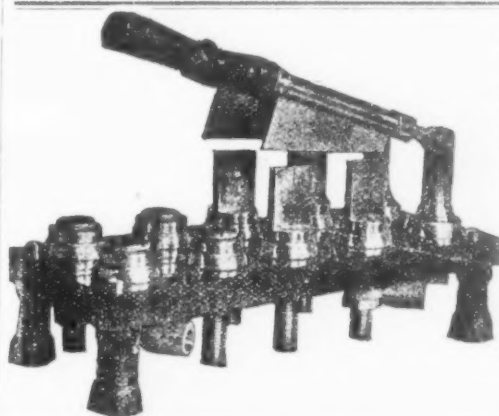
COMMUTATOR BARS AND SEGMENTS.

Heavy or Light Pure Copper Castings.

The Electrical Engineering & Supply Co.

Hunt Building, CHARLOTTE, N. C.

SOUTHERN ELECTRICAL ENGINEERS.



## Switches Switch Boards Panel Boards Electrical Specialties.

Write for Our Catalogue.

Crouse-Hinds Electric Co.

600 E. Water St.,

SYRACUSE, N. Y.

## ARC AND INCANDESCENT LAMPS,

Dynamos, Motors, Electrical Supplies,  
Boilers, Engines, Railway Supplies.

J. M. ZAMOISKI & CO.

515 Equitable Building, Baltimore, Md.

## COMMERCIAL ELECTRIC CO.

INDIANAPOLIS, IND.

Manufacturers of Electrical Machinery FOR ALL PURPOSES.

## Nickel Plating Outfits.

POLISHING MACHINERY.  
CHEMICALS.  
DYNAMOS.

THE HANSON & VAN WINKLE CO.  
CHICAGO. NEWARK, N. J.  
"ADDRESS DEPARTMENT W"

# General Electric Company,

Schenectady, N. Y.

Manufacturers of the

## STANDARD ELECTRICAL APPARATUS of the World.

Sales Offices in All Large Cities of the United States.



### WE CLAIM THE FOLLOWING MERITS FOR JENKINS BROS.' VALVES:

1. Manufactured of the best Steam Metal.
2. No regrinding, therefore not constantly wearing out the Seat of the Valves.
3. Contain JENKINS DISC, which is suitable for all Pressures of Steam, Oils and Acids.
4. The Easiest Repaired, and all parts interchangeable.
5. Every Valve Tested before leaving the factory.
6. ALL GENUINE stamped with Trade-Mark.

JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

## SIGHT FEED LUBRICATORS



LUNKENHEIMER'S

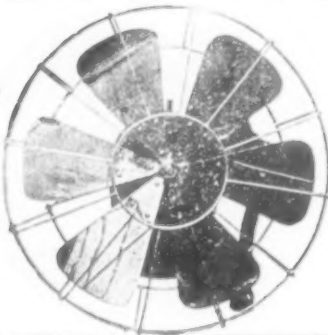
"Senior" and "Junior" Lubricators

Are you well known to call for any description in this space. This is only to remind you that they are more popular than ever and enjoy an increasing demand. They are unequalled for power of service and if you want the best you want Lubkenheimer's. It is only necessary to specify them when ordering. All goods marked "Lunkenheimer" are sold with a guarantee. Our catalogue will interest you. Free for the asking.

General Offices and Factories:

The Lubkenheimer Company, CINCINNATI, OHIO, U. S. A.

26 Canal Street, N. Y. City. 10 Great Dover Street, LONDON, S. E.



## SOMETHING NEW! The Gem Water Motor Fan

Novel in Construction. As Easily Installed as an Electric Fan Motor. Discounts for Exclusive Agents. Correspondence Solicited.

Simple. Effective. Economical. Noiseless. LIST PRICE, \$10.00.

Just the thing for Supply Houses to Carry.

AGENTS WANTED.

THE SCHNEIDER MFG. CO., 1136 Hamilton Street, CLEVELAND, O.

## THE CINCINNATI SAFE AND LOCK CO.

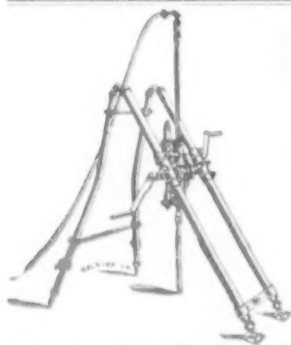
—MANUFACTURERS OF—



BANK LOCKS AND VAULT WORK,

CINCINNATI.

Office and Factory, 59, 61, 63, 65 and 67 Elm Street.  
G. V. HALLIDAY, PRESIDENT AND TREASURER.



## Contractor for Prospecting

WITH AND SALE OF

## DIAMOND DRILLS.

HOLES BORED ANY DEPTH ANY SIZE AT ANY ANGLE ANYWHERE

H. P. SIMPSON.

Scranton, Pa.

## DIXON'S SILICA GRAPHITE PAINT

FOR TIN OR SHINGLE ROOFS AND IRON WORK. Tin roofs well painted have not required repainting for 10 to 15 years. IT IS ABSOLUTELY WITHOUT AN EQUAL.

If you need any paint it will pay you to send for circular.

JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J.

## Mileage.

We make the interesting claim that our Wheelbarrows foot up a larger total daily mileage than those of any other make. They last longer than any other Wheelbarrows, and we make more than any other maker.

THE KILBOURNE & JACOBS MFG. CO., Columbus, Ohio, U. S. A.

## BUFFALO FORCE CO. AUTOMATIC ENGINES

New York Address: 26 CORTLAND STREET, BUFFALO, N. Y.



For Stationary, Portable, Traction Engines, Tugboats, &c. Thoroughly Reliable—Perfectly Automatic. JENKINS BROS., Selling Agents, NEW YORK, BOSTON, PHILA., CHICAGO.

## Lubrication Without OIL

IS SECURED BY OUR

GRAPHITE AND BRONZE BUSHINGS

Your Bearings! How are they?

GRAPHITE LUBRICATING CO.

Box W., Bound Brook, N. J.

## SELF-DUMPING COAL and ORE



## TUBS,

FOR

Contractors and Stevedores,

R. D. SEIDEL, Mfr.

Successor to Thos. L. Addison, READING, PA.

**NONE OF THIS FOR THOSE WHO**

**DO NOT SEE MERIT IN THE**

**GARDNER GRINDER**

**CHESLY CO.** 10-12 N. CANAL CHICAGO, ILL.

SEND FOR 300 PAGE ILLUS. CATALOGUE

## TANITE

The Tanite Co.,

STROUDSBURG, PA.

161 WASHINGTON ST., NEW YORK

Emery, Emery Wheels, Emery Wheelstones, Grinding Machines, Knife Sharpeners, Knife Grinders.

## Air Compressors

For Every Application of Compressed Air Power.

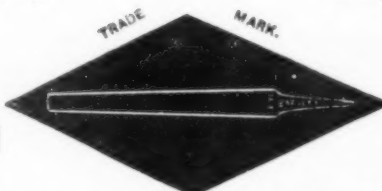
CLAYTON AIR COMPRESSOR WORKS 26 Cortlandt Street, NEW YORK. Complete Catalogue upon application.

## Black Diamond File Works.

Established 1863.

Incorporated 1895.

Twelve Medals Awarded at International Expositions.



Special Prize Gold Medal Atlanta 1895

Our goods are on sale in every leading Hardware Store in the United States and Canada.

G. & H. BARNETT CO., Philadelphia, Pa.

H. STEVENS' SONS CO., Macon, Ga.

Manufacturers of

## Sewer and R. R. Culvert Pipe,

Fire Brick, Milled Clay Flue Pipe and Chimney Top, UPNS, &c. Correspondence Solicited. Awarded Gold Medal Cotton States and International Exposition, 1895.



## HAINES, JONES & CADBURY CO.

PHILADELPHIA, PA.

MANUFACTURERS

HIGH CLASS PLUMBING GOODS.

## ROOFING SLATE

If you want Slate, much or little, send your plans and we will return them with bid, promptly.

Best Grades. Manufacturers' Prices. Prompt Shipments. SLATINGTON-BANGOR SLATE SYNDICATE, JAS. L. FOOTE, Gen'l Manager.

MINERS, WHOLESALE DEALERS & EXPORTERS SLATINGTON, PA.





THE  
LIBRARY  
OF THE  
UNIVERSITY OF  
TORONTO

MS

MS

THE  
LIBRARY  
OF THE  
UNIVERSITY OF  
TORONTO

THE  
LIBRARY  
OF THE  
UNIVERSITY OF  
TORONTO

THE  
LIBRARY  
OF THE  
UNIVERSITY OF  
TORONTO

THE  
LIBRARY  
OF THE  
UNIVERSITY OF  
TORONTO